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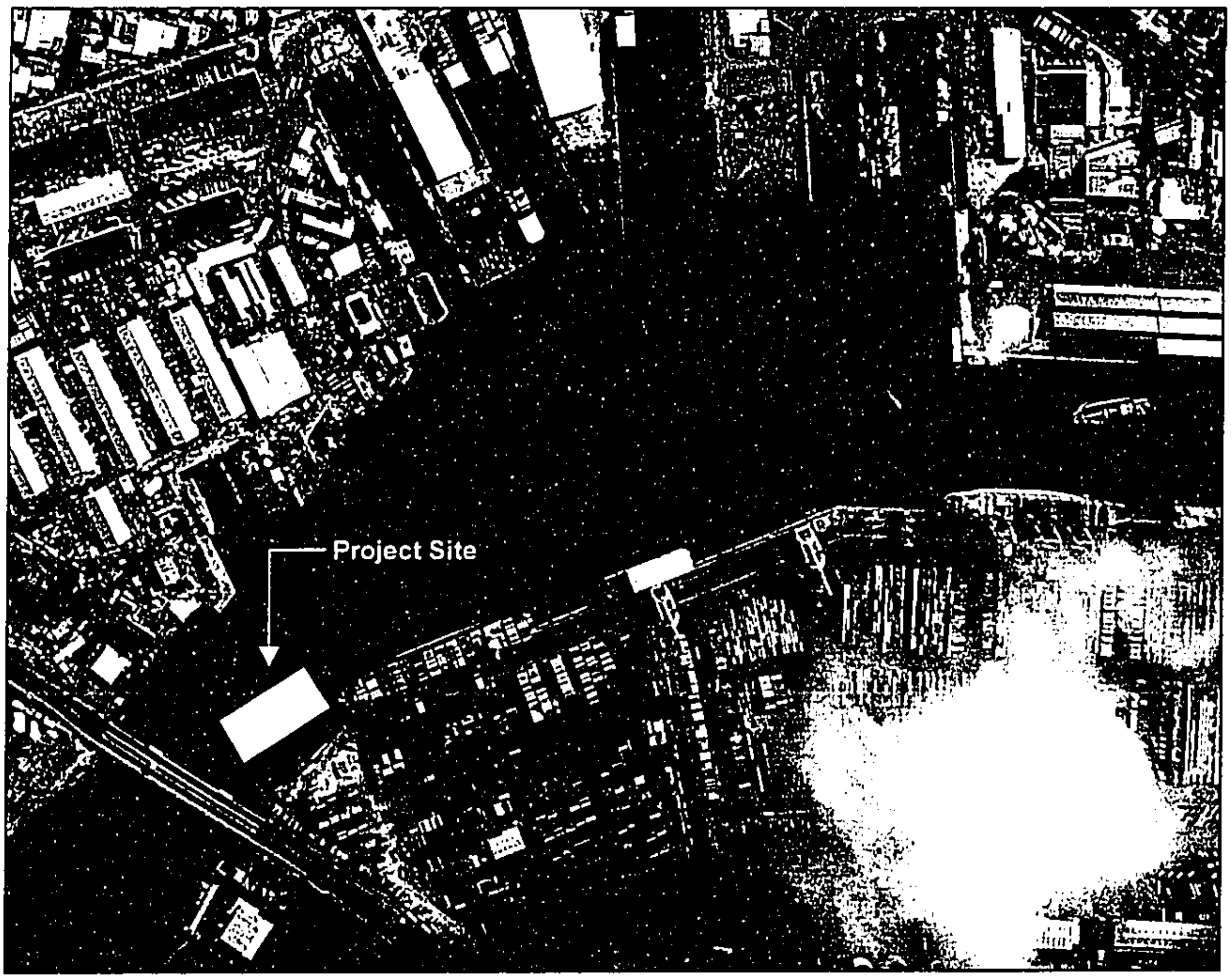
FINAL ENVIRONMENTAL ASSESSMENT and FINDING OF NO SIGNIFICANT IMPACT

DREDGE EWA END OF PIER 51A HONOLULU HARBOR, O'AHU, HAWAI'I

September, 2002



State of Hawai'i
Department of Transportation

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PROJECT SUMMARY

Project:	Dredge Ewa End of Pier 51A, Honolulu Harbor, Oahu, Hawaii Job H.C. 10118
Proposing Agency:	Department of Transportation, Harbors Division State of Hawaii Contact Person: Marshall Ando Phone: (808) 587-1961 Fax: (808) 587-1864 Email: marshall_ando@exec.state.hi.us
Agent:	Sea Engineering, Inc. Makai Research Pier Waimanalo, Hawaii 96795 Phone (808) 259-7966, Fax (808) 259-8143 Email: sei@seaengineering.com Attention: Scott Sullivan
Accepting Authority:	State of Hawaii, Department of Transportation
Location:	Honolulu Harbor, Kapalama Basin, Vicinity of Pier 51A
Land Use Classification:	Conservation District, Resource Subzone (submerged lands)
Proposed Project:	Dredging of a 100-foot by 250-foot (0.57 acre) area to improve large container and fuel tanker vessel navigation in the vicinity of Pier 51A. Existing water depth in the dredge area varies between 35 and 40 feet. The proposed dredging would provide for a uniform 40-foot depth by removing approximately 1,800 cubic yards of unconsolidated silt, sand and gravel sediment. Dredge spoil would be transported by barge to Kalaeloa Barbers Point Harbor for dewatering in an on-land containment area, then disposed of at an approved on-land disposal site.
Determination:	FONSI

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
DREDGE EWA END OF PIER 51A, HONOLULU HARBOR
OAHU, HAWAII

1. Description of the Proposed Action. The project consists of dredging a 100-foot by 250-foot (0.57 acre) area at the west end of Pier 51A to improve large container and fuel tanker vessel navigation and berthing conditions. Existing water depth in the dredge area varies between 35 and 40 feet. The proposed dredging will provide for a uniform 40-foot depth by removing approximately 1,800 cubic yards of silt, sand and gravel sediment. Dredge spoil will be transported by barge to Kalaeloa Barbers Point Harbor for dewatering in an on-land containment area, then disposed of at an approved landfill.

2. Basis for Determination. The following criteria were considered in the environmental assessment for making the finding of no significant impact (FONSI).

   2.1. The proposed project will not involve an irrevocable commitment to the loss or destruction to any natural or cultural resource. The project involves dredging in area that has been previously dredged. There are no natural or cultural resources at the site.

   2.2. The proposed project will not curtail the range of beneficial uses of the environment. The project site is in Honolulu Harbor, the major commercial port in the state. The project will enhance the beneficial use of the harbor, by allowing safer maneuverability and berthing.

   2.3. The proposed project will not conflict with the State's long-term environmental policies. The project is consistent with the State's policy to conserve natural resources, enhance the environment and create opportunities for the residents of Hawaii by providing for safer use of the pier and reducing the risk of spills or accidents.

   2.4. The proposed project will not substantially affect the economic or social welfare of the community or State. The project will improve the economic and social welfare of the State by allowing more efficient and safer use of Pier 51A.

   2.5. The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities. The project will not result in the construction of new facilities or increase usage of existing ones.

   2.6. The proposed project will not affect public health. There are no anticipated impacts of the project on public health.

   2.7. The proposed project will not involve a substantial degradation of environmental quality. The project site has been dredged several times previously, and therefore would not be degraded by the proposed dredging.

2.7. The proposed project will not involve a substantial degradation of environmental quality. The project site has been dredged several times previously, and therefore would not be degraded by the proposed dredging.

2.8. The proposed project will not cumulatively affect the environment. The actual dredging is anticipated to be completed in one to two weeks. In addition, it will not result in increased usage of the pier. Therefore, there should be no cumulative effects on the environment.

2.9. The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat. No endangered species of flora or fauna are known to exist in the project site.

2.10. The proposed project will not significantly affect air or water quality or ambient noise levels during dredging. A turbidity barrier (silt curtain) will be required to isolate the dredging activity from the harbor waters, and daily water quality monitoring will be required to insure the effectiveness of the barrier and insure that there are no impacts to harbor water quality outside of the dredge area. There will be no lasting impacts on air or water quality or ambient noise.

2.11. The various elements of the proposed projects will not be located in any environmentally sensitive area, such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, freshwater or coastal waters.

2.12. The proposed project will not affect scenic vistas. The project site is on the seafloor inside Honolulu Harbor.

2.13. The proposed project will not require significant short-term or long-term energy consumption. The project may actually reduce overall energy consumption by allowing more efficient use of the pier.

3. Determination. Based on the findings of the environmental assessment, the Department of Transportation, State of Hawaii, has determined that the proposed dredging project does not constitute an action significantly affecting the quality of the environment; therefore an EIS will not be prepared for this project.

Brian K. Minaai
Director, Department of Transportation
State of Hawaii

9/3/02
Date

1.0 PROJECT DESCRIPTION

1.1 Introduction

Honolulu Harbor, centrally located on the south shore of Oahu, is the largest and most important of Oahu's and the State's commercial harbors. Its success as a port has helped the City of Honolulu, which takes its name from the harbor, evolve into the State's capitol city and the business and commercial center of the State. Honolulu's central business district grew around the harbor, and the coastal area from Ala Moana Shopping Center to the Keehi Lagoon and Sand Island industrial district is dominated by harbor and waterfront activities. The harbor serves as the port-of-entry for nearly all imported goods to the State.

The harbor area was originally a natural embayment in the fringing reef created by freshwater flows from Nuuanu Valley, which inhibited coral growth. Commercial use of the area as a harbor began around 1800, and since then the harbor water area has been enlarged and deepened many times, and docks and wharves constructed around the harbor shore, to create the most extensive port facility in the State. Sand Island was created between about 1940 and 1947 from dredged material removed from Keehi Lagoon and the harbor, which then created Kapalama Basin in the lee of the enlarged Sand Island. The federal government, through the U.S. Army Corps of Engineers, presently maintains the general navigation portion of the harbor (entrance and connecting channels and turning basins), while the State Department of Transportation, Harbors Division, maintains berthing areas and docks and wharves. The present harbor general navigation features consist of a Main Entrance Channel (Fort Armstrong Channel) 4,000 feet long, 500 feet wide, 45 feet deep; a Main Basin 3,300 feet long, 1,520 feet wide, 40 feet deep; a West Harbor Basin (Kapalama Basin) 3,400 feet long, 1,000 feet wide, 40 feet deep; and a channel connecting the two basins (Kapalama Channel) 400 feet wide and 40 feet deep (Figure 1.1). Piers 51 – 53 were originally constructed in 1944. Maintenance dredging of the channels and basins to project depth was last accomplished by the Corps of Engineers in 1999.

Beginning in 1980 container vessel operations were consolidated on Sand Island, and Matson Navigation and CSX Lines presently operate at Piers 51B, 52, 53 and 51A, respectively. Containerized cargo is projected to increase significantly for the foreseeable future, almost doubling in the next 20 years.

A detailed history of the development of Honolulu Harbor, and projections for future growth and harbor needs, can be found in the report *Oahu Commercial Harbors 2020 Master Plan*, prepared by the State of Hawaii, Department of Transportation, Harbors Division, May 1997.

1.2 Project Location

The project site is located adjacent to the west (Ewa) end of Pier 51A in Kapalama Basin, as shown on Figures 1.1 to 1.3. The area to be dredged is a rectangle 100 feet wide by 250 feet long, with its south (Sand Island) side parallel to the pier face.

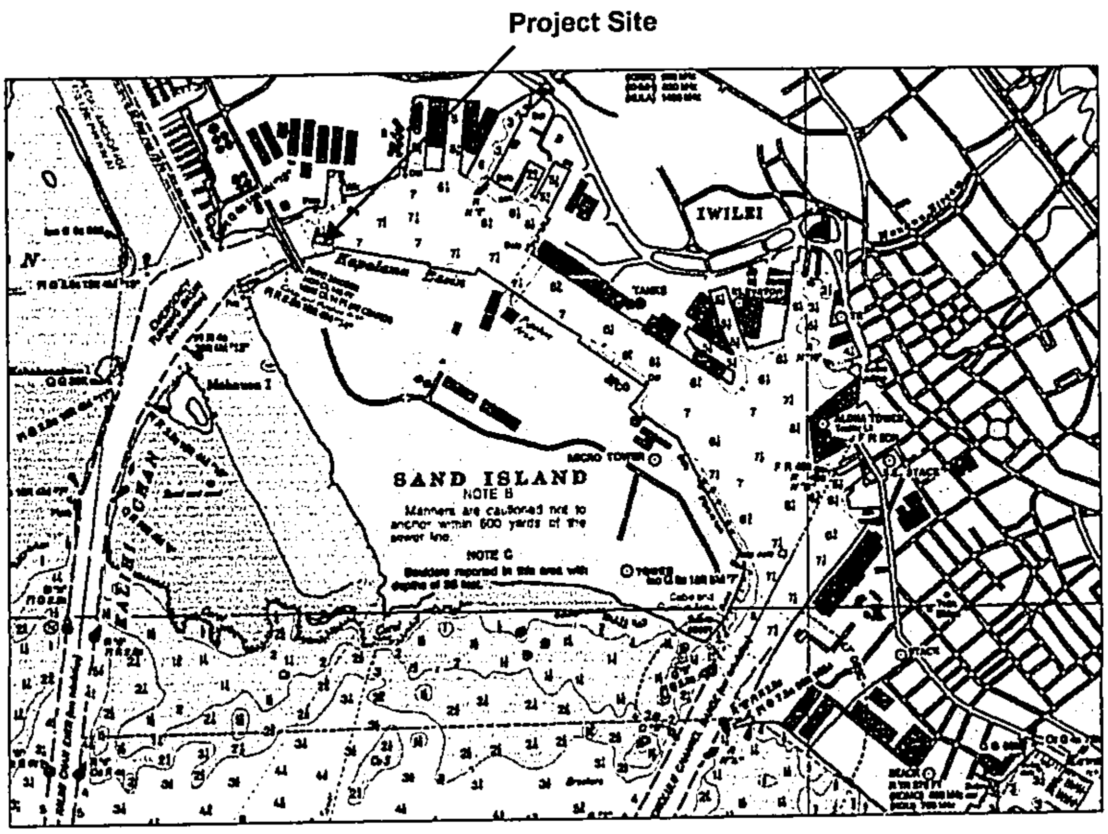


Figure 1.1 – Map of Honolulu Harbor and Vicinity

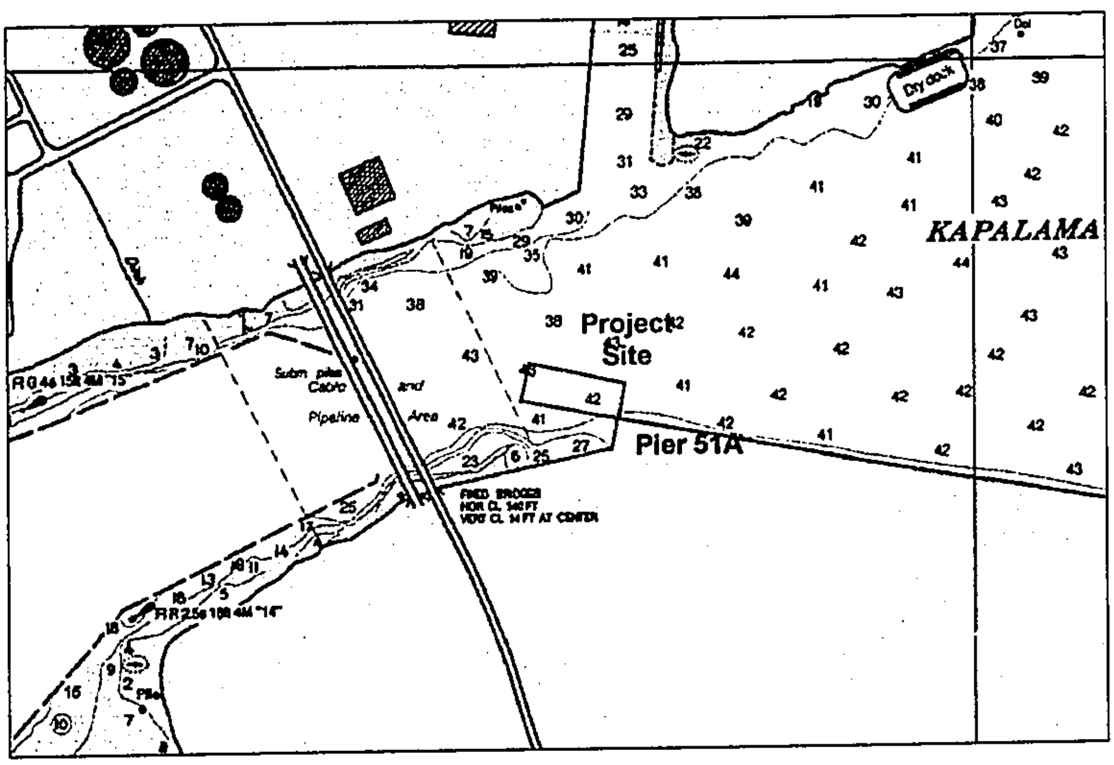


Figure 1.2 – Map of Project Site

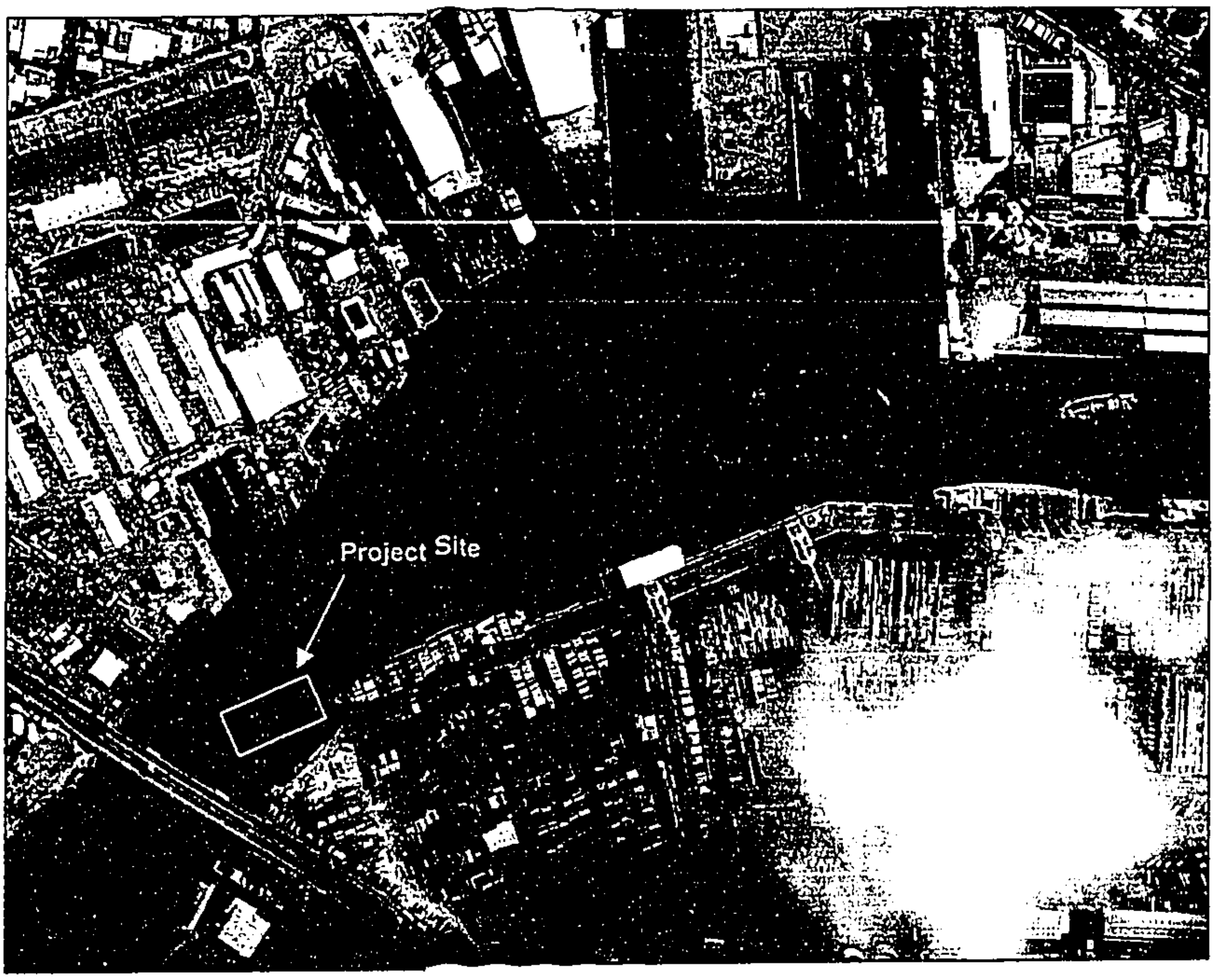


Figure 1.3 – Aerial Photograph of Project Location

1.3 Description of the Proposed Project

The federal project depth of Honolulu Harbor, and the depth to which the general navigation areas (Main Entrance Channel, Main Basin, Kapalama Basin, Kapalama Channel) are maintained by the Corps of Engineers, is –40 feet mean lower low water (mllw). Berthing area (typically 50 to 100 feet from the pier or bulkhead line) depths vary up to –40 feet mllw, and dredging maintenance is the responsibility of the State. In the vicinity of Pier 51A the dredge depth is –40 feet to accommodate the large container vessels using the pier. Stream and drainage channel inflow to the harbor results in sediment accumulation, which gradually decreases the harbor depth. Maintenance dredging by the Corps of Engineers is typically accomplished every 5 to 10 years by a suction hopper dredge, with dredge spoil disposal at the US Environmental Protection Agency (USEPA) approved offshore disposal site located 3 miles seaward of Honolulu Harbor. Maintenance dredging of Honolulu Harbor was most recently conducted in 1990 and 1999, and 135,000 and 191,000 cubic yards of material was removed, respectively.

During bioassay and bioaccumulation testing for the 1999 maintenance dredging accomplished by the Corps of Engineers, sediments from the west end of Kapalama Basin did not pass the criteria for ocean disposal (Honolulu Harbor Bioassay & Bioaccumulation Testing, FY99 Maintenance Dredging, State of Hawaii, Commercial Ports, prepared by Kimura International and MEC Analytical Systems, Inc., June 1998). The criteria for amphipod (*Grandidierella japonica*) solid phase bioassay survival acceptability was exceeded, and elevated PAH compound concentrations are the primary chemicals suspected as the cause of the sediment toxicity. Maintenance dredging in 1999 was accomplished by the Corps of Engineers hopper dredge vessel *Essayons*, which was only equipped to dredge and transport the material for disposal offshore. On-land disposal of dredge material was not possible using the *Essayons*. Thus, because the material was not acceptable for offshore disposal, and on-land disposal could not be accomplished by the dredge vessel, dredging of the west end of Kapalama Basin was not included in the 1999 maintenance dredging (per Patrick Tom, Honolulu Engineer District. personal communication).

Vessels currently berthing at Pier 51A include deep-draft container cargo vessels operated by CSX Lines, and fuel tankers which offload at the pier. Both of these vessels need to overhang, or extend past, the end of the pier in order to optimize their respective cargo offloading operations. Sediment accumulation has resulted in existing water depths in the overhang area as shallow as –36 feet, thus inhibiting maneuvering and berthing by the fully loaded vessels. Figure 1.4 shows the depths in the project area. It is proposed to dredge a 250-foot-long by 100-foot-wide area immediately west of the end of Pier 51A to a depth of –40 feet to match the design depth of Kapalama Basin, and permit safe navigation and berthing for the vessels utilizing the pier. The dredge area and existing water depths are shown on Figure 1.4.

Based on a hydrographic survey conducted for this project in March 2002, shown in Figure 1.4, approximately 1,637 cubic yards of sediment is to be removed from the project area. Assuming approximately 10% more for over-excavation, the project will involve a total of 1,800 cubic yards of sediment removal.

1.4 Dredging Methodology

A barge-mounted crane with a clamshell bucket will be utilized for the dredging operations. Turbidity barriers will be deployed to prevent silt migration from the project limits. The turbidity curtains will surround the project area in a semi-circle. The turbidity barriers will be composed of a floating boom and a suspended curtain hanging down 35 feet from the surface of the water. A plan and profile view of the turbidity barrier is shown on Figure 1.5.

Water quality sampling will be required prior to and during the performance of dredging services. Ten pre-dredging water quality-sampling events will be required over a two-week period at a single point within the project limits at the mid-water depth (approximately 20 feet). From these ten events, a mean baseline value and a standard deviation will be established for each water quality parameter. Water quality monitoring during dredge operations will consist of daily sampling at a location 1 meter outside of the turbidity barrier in the vicinity of that day's operations at two depths: near-surface and mid-water (approximately –20 feet).

Dredged material will be placed in a floating watertight scow by the crane for transport for offloading on-land to a designated containment area for dewatering (drying) by evaporation. The scow will be off-loaded by a front-end loader equipped with a watertight bucket. A ramp with a catchment system will be used during the offloading to prevent any accidental spillage of dredge spoil from entering the harbor water. The dredge spoil will be contained within an impermeable earthen berm during the drying process to prevent any flow back to state waters, and the containment area will be lined with an impervious bottom to prevent seepage into the soil and groundwater below. No runoff or dewatering flow back to coastal waters during any portion of the dredging or disposal operations will be permitted by the dredging contract documents. Following dewatering, the dredge spoil will be transported by truck to an approved on-land disposal site.

The dewatering site will be located at Kalaeloa Barbers Point Harbor. The containment area will be relatively small in footprint (approximately 0.7 acres), with an impermeable barrier on the bottom, overlain by a 4" thick sand cushion and geotextile filter fabric to protect the barrier during handling of the spoil. The containment area will be surrounded by a 4-foot-high earthen berm also covered by the impermeable barrier, and protected by a silt fence to prevent erosion of the berm material. Dredge spoil thickness within the containment area will be about 3 feet. Plan and profile views of the de-watering site are shown on Figure 1.6.

The duration of the dredging and disposal operations is estimated to be six months, including mobilization, containment area preparation, dredging, drying and disposal. Actual in-water dredging is anticipated to take about one to two weeks. Drying of the dredge spoil is expected to take about 4 months.

The total estimated cost of dredging and disposal is $575,000.

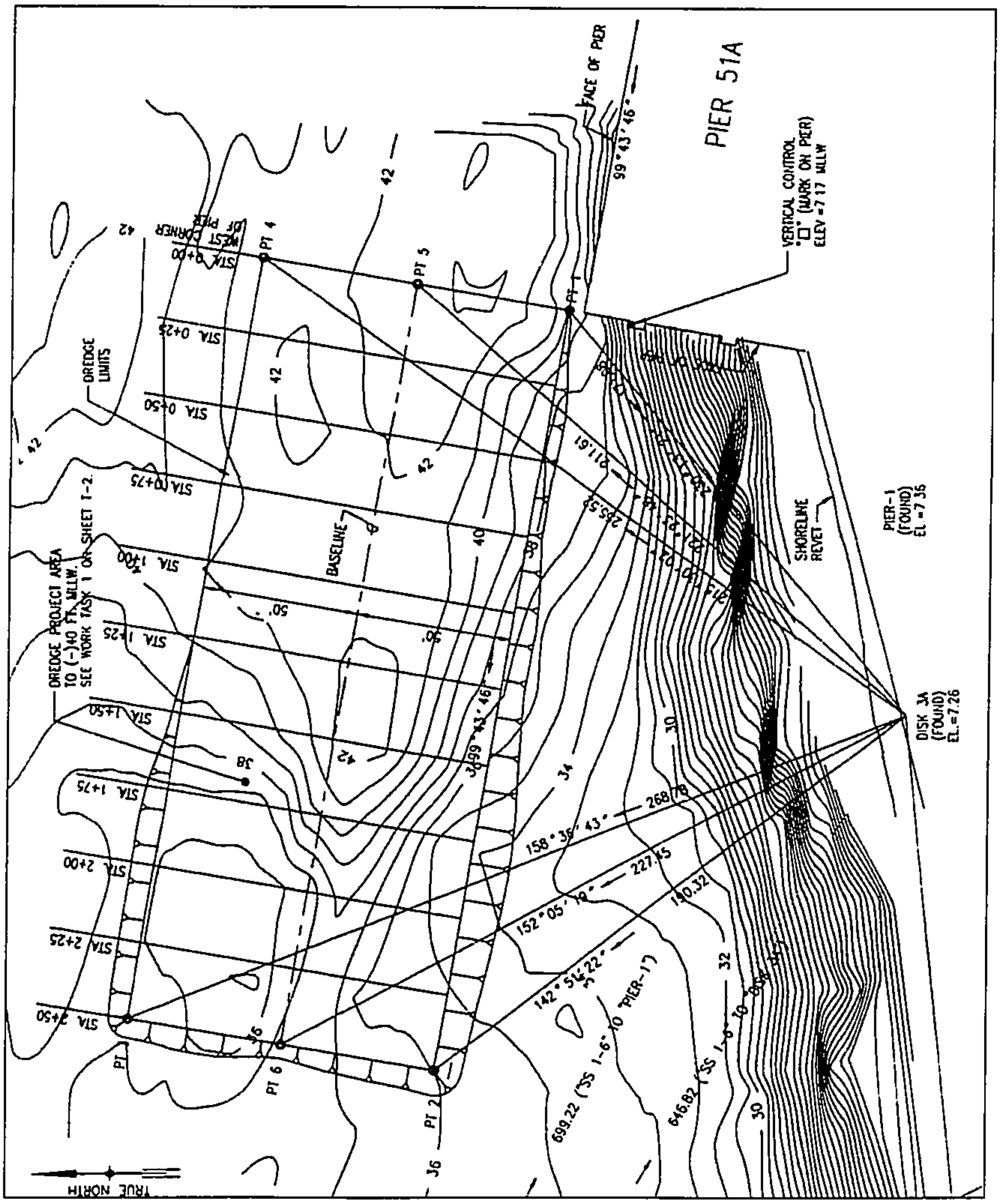


Figure 1.4 – Dredge Area and Existing Water Depths

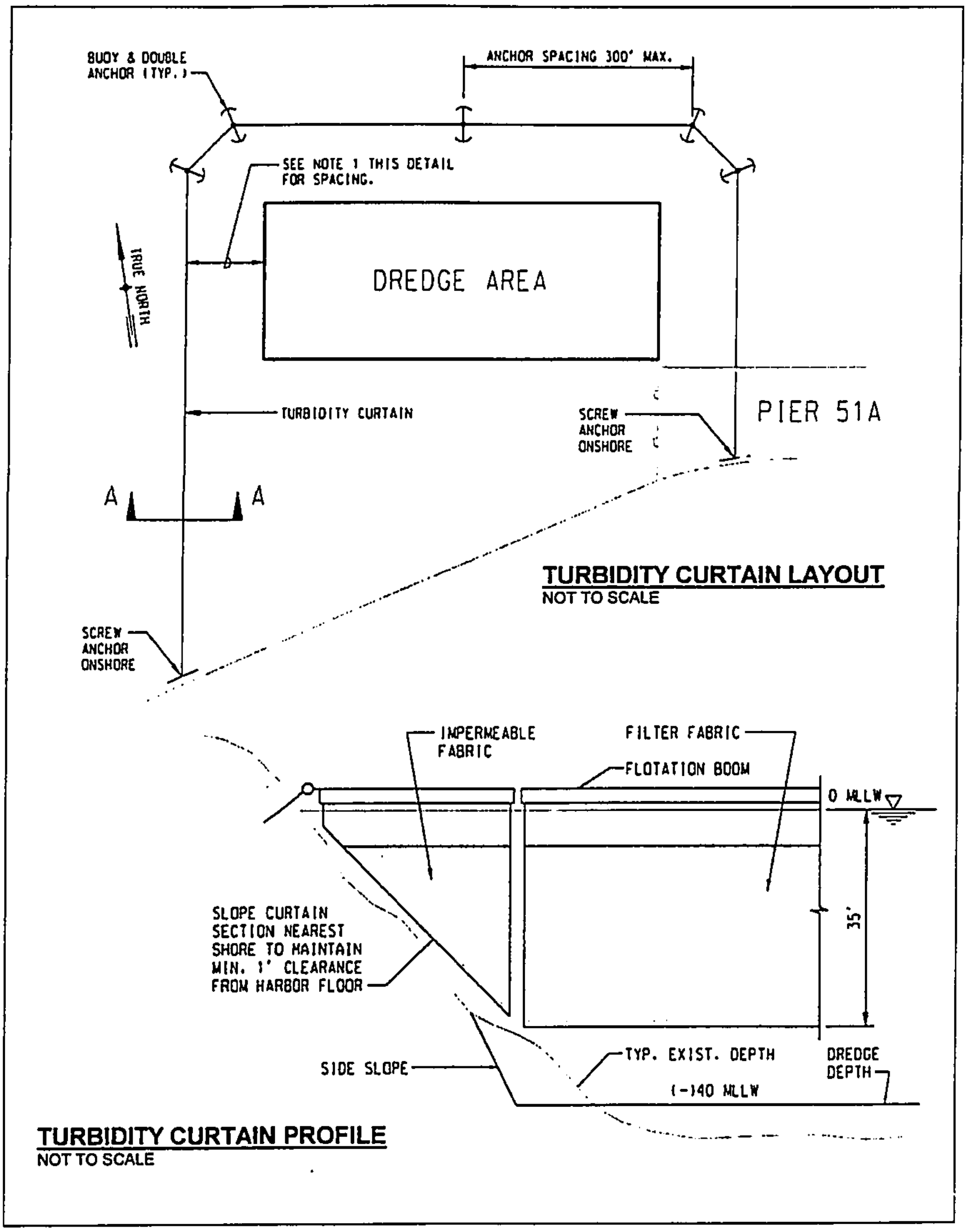
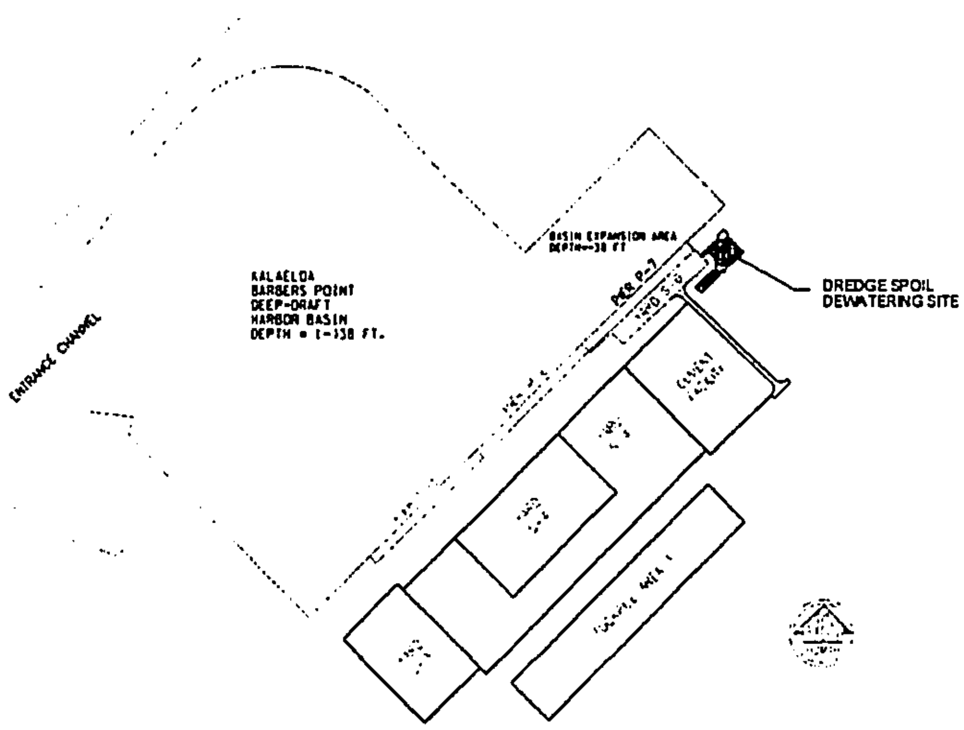
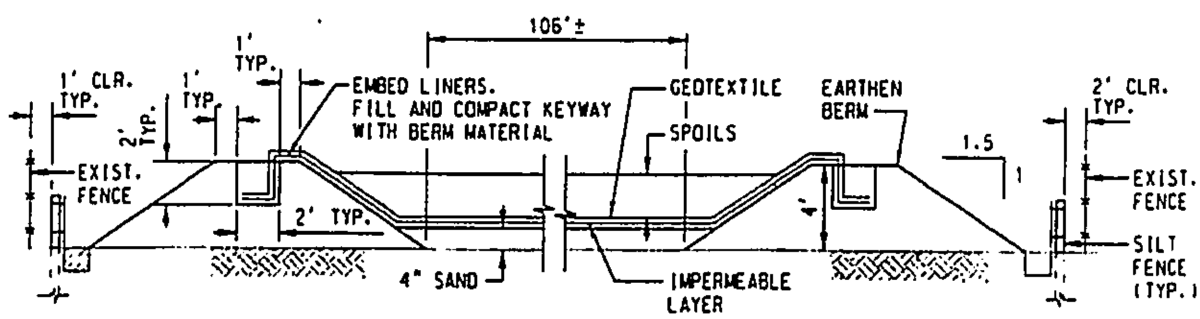


Figure 1.5 – Turbidity Barrier Plan and Profile



LOCATION MAP
NOT TO SCALE



TYPICAL SECTION – SPOILS CONTAINMENT
NOT TO SCALE

Figure 1.6 – Dredge Spoil Dewatering Site

2.0 ENVIRONMENTAL SETTING

2.1 General

The site of what is now Honolulu Harbor was originally a natural embayment in the fringing reef along Oahu's central south shore, created by coral inhibiting freshwater flows from streams draining Nuuanu Valley. Expansion and construction in the harbor vicinity, including Keehi Lagoon immediately west of the harbor, for the past 200 years has resulted in the present completely manmade harbor configuration. Dredging has increased the water area and depth, and landfill and pier and wharf construction has created the harbor shoreline and the approximate 520-acre "Sand Island" which provides protection for the two harbor basins. From east to west, the present crescent-shaped harbor consists of the Main Entrance Channel leading onto the Main (Honolulu) Basin, Kapalama Channel leading to Kapalama Basin, and the Kalihi Channel through Keehi Lagoon back to the sea (Figure 1.1). The last major improvements to the harbor were constructed in 1980-81, when the harbor depth was increased by 5 feet to its present –40 feet mllw, and container handling facilities were consolidated on the west side of Sand Island. In 1988 the bascule bridge (a drawbridge which permitted large ships to exit the harbor via Kalihi Channel) was locked in place, and then a second fixed bridge constructed, to improve traffic flow to the Sand Island container facilities.

Two streams discharge into the harbor. Nuuanu Stream, which discharges into the main harbor basin, has a mean flow of 5 MGD. The Kapalama Stream, also known as the Kapalama Drainage Canal, discharges into the slip between Piers 38 and 39. The stream is not perennial and has a low mean flow.

The shoreline in the project vicinity consists of Pier 51A immediately to the east, and a steeply sloping revetment angling to the southwest 50 to 130 feet south of the dredge area (Figure 1.4). Pier 51A serves container cargo vessels and fuel tankers.

2.2 Winds

The wind climate in Honolulu Harbor is dominated by the prevailing trade winds, which approach from the sector north through southeast. Wind data recorded at Honolulu International Airport (Table 2.1) shows that trade winds from the northeast and east-northeast occur 60% of the time, with speeds averaging 11 knots. Peak speeds recorded were in the range of 41 to 47 knots. Wind speeds exceed 16 knots only 8.4% of the time. During the summer, the trades occur 80 to 90 percent of the time, with typical speeds of 8 to 20 knots. During the winter months, the trade winds occur less frequently, and the frequency of southerly or westerly winds, known as Kona winds, increases due to localized low-pressure systems and frontal systems. Kona wind speeds can range up to gale strength. During a typical winter season, two to three Kona storm events may occur. Heavy rains are generally associated with Kona storm events. Winds associated with infrequent hurricanes can be as high as 80 knots.

The waters of the project site are sheltered from wind approach from all directions, and there is little exposed fetch for the generation of wind waves. The main effect of the winds is on vessel operations at the site, due to the wind acting on the sail area of the vessels.

Table 2.1 – Summary of Wind Direction and Speed at Honolulu International Airport (1949 – 1995)

16 PT. DIR.	SPEED (KNOTS) 1 - 3	4 - 6	7-10	11-16	17-21	22-27	28-33	34-40	41-47	48-55	>=56	TOTAL PERCNT	MEAN WIND SPEED
N	.8	1.7	.9	.3	*	*	0	0	*	0	0	3.6	5.7
NNE	.5	1.2	1.2	1.0	.1	*	0	0	0	0	0	4.0	8.0
NE	.6	2.8	7.1	10.3	2.4	.3	*	*	0	0	0	23.9	11.3
ENE	.4	3.8	12.0	16.6	3.9	.4	*	0	0	0	0	36.9	11.5
E	.3	1.3	2.9	2.8	.6	.1	*	0	0	0	0	7.5	10.1
ESE	.1	.4	.5	.3	*	*	0	*	*	0	0	1.3	9.0
SE	.1	.3	.7	.7	.1	*	*	0	0	0	0	1.9	10.4
SSE	.1	.3	1.0	.6	.1	*	*	*	0	0	0	2.2	9.7
S	.1	.6	1.2	.4	.1	*	*	0	0	0	0	2.4	8.0
SSW	.1	.4	.8	.3	*	*	*	0	0	0	0	1.6	8.4
SW	.1	.3	.8	.3	*	*	*	0	0	0	0	1.6	9.0
WSW	.1	.2	.4	.3	*	*	*	0	0	0	0	1.0	9.1
W	.2	.5	.2	.2	*	*	*	0	0	0	0	1.0	6.3
WNW	.4	1.2	.2	*	*	*	*	0	0	0	0	1.8	5.0
NW	.8	2.4	.6	.1	*	*	0	0	0	0	0	4.0	5.5
NNW	.6	1.8	.5	.2	*	*	0	0	0	0	0	3.3	5.7
VAR	0	0	0	0	0	0	0	0	0	0	0	0	0
CLM	0	0	0	0	0	0	0	0	0	0	0	2.5	0
ALL	5.1	19.4	30.6	34.0	7.5	.9	*	*	*	0	0	100	9.9

* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED

2.3 Tides

Tides in Honolulu Harbor are semidiurnal, with a marked diurnal inequality. The mean tide range is 1.2 feet. Various water levels, referenced to Mean Lower Low Water (MLLW) datum are:

Mean Higher High Water (MHHW)	1.9 ft.
Mean Sea Level (MSL)	0.9 ft.
Mean Lower Low Water (MLLW)	0.0 ft.

2.4 Wave Climate

The coastline off Honolulu Harbor is exposed to three general wave types: south swell, Kona storm waves and hurricane generated waves. The harbor, by virtue of its location on the south shore of Oahu, is sheltered from the approach of the winter season north Pacific swell and the waves generated by the prevailing northeast tradewinds.

South swell occurs primarily during the months of April through September. Approach directions range from southeast through southwest and deepwater wave heights are typically five feet or less. Breaker heights on the fringing reef can reach heights of 15 feet, but typical heights during south swell occurrences are 6 feet or less.

The interior of the harbor is sheltered from the south swell by the landmass of Sand Island, which extends from the Honolulu Harbor Entrance Channel to the Kalihi Channel. Incoming waves are attenuated as they move shoreward up the long entrance channel. As a result of the sheltering and attenuation, the interior of the harbor is typically calm, except during the occurrence of local storms or hurricanes. During typical conditions, there are negligible waves in the project area, except for boat wakes from passing vessels.

Kona storm waves are generated by local low-pressure systems, and occur most commonly during the winter months when the tradewind pattern weakens. The low-pressure systems result in winds and waves approaching from the south or southwest. Deepwater wave heights during severe Kona events may be up to 15 feet.

Infrequent hurricanes generate large waves that affect the Hawaiian Islands, particularly the south and west coasts. The wind speeds and wave heights associated with the hurricanes may be much greater than those associated with Kona storms, and present the worst case design situation. Two notable hurricanes affected the south coast of Oahu in recent years, Hurricane Iwa in 1982 and Hurricane Iniki in 1992. Maximum deepwater wave heights associated with these events were in excess of 40 feet.

Water level rise above the normal still water level will occur in the harbor during storms or hurricanes. The rise is due to wave setup, wind setup, barometric pressure effect. Bretschneider and Noda (1985) evaluated possible inundation limits for the south coast of Oahu due to hurricane-induced water level rise and wave effects. The worst case hurricane was predicted to result in a total water level rise inside the harbor of 3.2 feet above the normal tide level. If this coincided with MHHW, the total water level height would be 5.1 feet above MLLW. During Hurricane Iwa, the measured setup was 2.1 feet above the normal tide level.

2.5 Tsunamis

Based upon historical records, tsunami runup is not a serious problem in Honolulu Harbor. The predicted water level rise during the occurrence of a 100-year tsunami on the seaward side of Sand Island is predicted to be 3.5 feet above prevailing sea level (M&E Pacific, 1978). Recorded tsunami runup heights along the coast between Ala Moana Park and Pearl Harbor have typically been five feet or less (Loomis, 1976). Heights inside the harbor should be somewhat less.

2.6 Currents

Currents in Mamala Bay off Honolulu Harbor are tidally driven, with typical speeds of 0.8 feet per second (24 cm/s). The currents usually reverse with the tide, with flood currents setting to the west and ebb currents setting to the east. Overall net transport is to the southwest. Surface currents are affected by the prevailing winds.

Inside the harbor, currents are generally much weaker. Sea Engineering has previously (2001) measured currents for a 43-day period from November 28, 2000 to January 9, 2001, in the Kalihi Channel by the Sand Island Bridge, about 250 feet west of the proposed dredge area. Measurements were obtained with a bottom mounted Aanderaa DCM 12 acoustic doppler current meter. The DCM 12 measures currents using four acoustic transducers, which transmit ultrasonic pulses towards the sea surface. Particles and organisms in the water column back-scatter the sound back to the transducers, with the frequencies of the echoes changing due to the movements of the scattering particles (i.e. doppler shift). The DCM 12 measures currents in five layers through the water column. The first 2 meters of the water column above the instrument are illegible to the meter, and the remaining water column is divided into five cells that overlap each other by 50 percent. The water depth at the current meter location was 12 meters (38 feet) and the meter height was 0.6 meters (2 feet) above the bottom. The five cell depths above the current meter were 0 through 3 meters (0 to 10 feet), 1.5 meters through 4.5 meters (5 to 15 feet), 3 through 6 meters (10 to 20 feet), 4.5 through 7.6 meters (15 to 25 feet), and 6 through 9 meters (20 to 30 feet). Measurements were obtained at 20-minute sampling intervals with each data point representing the average of a 10-minute sampling period at a sample rate of 10 seconds (i.e. the average of 60 discrete speed and direction samples). The meter can measure currents ranging between 0 and 500 cm/s with an accuracy of ±3 cm/s, and current direction with an accuracy of ±5 degrees. Additionally, the meter can measure water levels ranging from 0 to 70 meters with an accuracy ±0.1 percent of the water column, or ±1.2 cm at the meter location in this study.

The current data is summarized in Table 2.2. The current flow in this channel area is characterized by a predominant flow out of the harbor, and a lesser component of flow into the harbor. Overall net transport is to the west (276 degrees) in the surface 3 meters, and the west-southwest (between 245 to 250 degrees) in the rest of the water column. The occurrence of flow into the harbor increases with water depth. Between the water surface and the 4.5-meter (15-

foot) depth, currents flow out of the harbor approximately 45% of the time, and into the harbor about 25% of the time. However, at water depths of 6 to 9 meters (20 to 30 feet), currents flow out of the harbor 40% of the time and into the harbor about 32% of the time.

Current speeds were weakest in the surface layer; the average current speed was 4.8 cm/s and the maximum recorded speed was 25 cm/s. Below the surface, the average current speed was about 8.7 cm/s and the maximum recorded speed was 40 to 43 cm/s. The maximum current speeds were recorded between December 9 and 12, when the tidal range was 0.85 meters (2.8 feet), the maximum for the year.

A noteworthy feature of the current flow revealed by the current meter data is that the greatest occurrence of flow into the harbor occurred during ebb tides, when currents would be expected to flow out of the harbor. This feature, and the predominance of flow out of the harbor, indicate the currents in this channel are complex, and not simply governed by tidal flow into and out of the harbor.

Table 2.2 – Current Data Summary For Overall Record (11/28/00 – 01/09/01)

Cell Depth (meters)	Average Speed (cm/s)	Maximum Velocity (cm/s / TN)		Net Transport (cm/s / TN)	% Flow	
		Raw Data	1-Hr-Av. Data		In (ENE)	Out (WSW)
0-3	4.8	25.0/ ENE	21.3 / W	2.0 / W	22	45
1.5-4.5	8.8	38.0 / ENE	29.7 / WSW	2.4 / WSW	26	46
3-6	8.7	43.0 / ENE	29.9 / ENE	2.0 / WSW	28	44
4.5-7.6	8.7	41.0 / ENE	31.6 / ENE	1.6 / WSW	29	42
6-9	8.7	40.0 / ENE	28.6 / ENE	1.0 / WSW	32	40

There are several possible explanations for the complexities of the flow in the channel. First, Ke'ehi Lagoon is located immediately adjacent to Kalihi Channel, and has a surface area five times greater than Honolulu Harbor. The bathymetry of the lagoon is complex, and a broad reef flat separates the lagoon from the ocean. Two channels have been dredged through the reef (Kalihi Channel and a channel next to the reef runway), and a third channel adjacent to Sand Island is blocked from the ocean by a narrow band or reef. There are numerous islands and the interior of the lagoon has a broad flat area in the middle. Wind is a major force driving the circulation in Ke'ehi Lagoon. Previous studies comparing flow in Ke'ehi Lagoon before and after construction of the airport reef runway found that flow into and out of Honolulu Harbor significantly increased following construction and that flow in Ke'ehi Lagoon is up to 5 times larger than would be expected if flow in the lagoon were simply tidally driven, (Post Construction Current Circulation Study For The Reef Runway by Edward K. Noda and Associates, 1977). Because of the much larger size of Ke'ehi Lagoon, flow in the lagoon is an important factor influencing flow in the channel into Honolulu Harbor. Secondly, Honolulu Harbor has two entrances, and there may be a net circulation system governed by the interaction between the two entrances and the surrounding ocean. Thirdly, currents may vary significantly within the channel and harbor basin. The majority of the flow in the channel may be restricted to only a portion of the channel, or there may be eddies within the channel. Finally, wind, fresh water input or regional offshore currents could be important factors governing circulation in the vicinity.

2.7 Water Quality

Honolulu Harbor originally was developed in the late 1800s along the channel through the reef created by Nu'uanu Stream. Dredging over the years gradually increased the size and depth of the harbor basin and entrance channel (Honolulu or Fort Armstrong Channel). The Kapalama Basin, also once a natural break in the reef, was eventually joined to the Honolulu Basin by dredging a channel between them. The expansion of fill areas across the reef flats to the south and west resulted in a harbor with poor circulation and attendant water quality problems (Cox and Gordon, 1970). In 1960, the western entrance channel (Kalihi Channel) was opened to Kapalama Basin, substantially improving circulation within the latter basin and Honolulu Harbor as a whole. Circulation appears to have benefited still further with changes made in Ke'ehi Lagoon by the Reef Runway Project (Ed Noda & Assoc., 1978; *AECOS*, 1991).

Honolulu Harbor and Kapalama Basin are classified as Class A embayments by the State of Hawaii, Department of Health in the water quality standards (HAR, §11-54; see DOH, 2000). Kapalama Stream flows into Kapalama Basin near Pier 38. Baseline flow is estimated at about 1.1 mgd (1.7 cfs) with an average storm event flow of about 16.6 mgd. This stream is also a source of sediment and nutrient inputs into Kapalama Basin.

Historically, water quality in Honolulu Harbor and Kapalama Basin has generally been regarded as poor (Cox & Gordon, 1970). This is not surprising considering the potential sources of pollution. The two watersheds that drain into these basins through Nuuanu Stream and Kapalama Canal encompass major developed areas of the city of Honolulu. Honolulu Harbor, together with Kapalama Basin, is the principal commercial port for the Hawaiian Islands, and aside from the comings and goings of large ships, the waterfront surrounding these basins, Kapalama Canal, and the lower reaches of Nuuanu Stream all receive discharges and runoff from major light industrial and urban areas of the city. Prior to construction of the deep sewage outfall off Sand Island, sewage contamination of nearshore waters undoubtedly influenced the waters of both Honolulu Harbor and Kapalama Basin under certain oceanographic conditions (Laevastu, Avery, and Cox, 1964). Most of the point discharges historically entering Honolulu Harbor have been diverted to the new Sand Island Waste Water Treatment Plant (DOH, 1982). Enhanced flushing of Ke'ehi Lagoon and Kapalama Basin after completion of the Reef Runway project, along with diversion of the Sand Island sewage effluent into deep water offshore, have all likely had a positive impact on water quality in the project areas. As a general indication of water quality, *AECOS* (1979) compared mean extinction coefficients (a measure of water column clarity) from before construction of the Reef Runway (data from Oceanic Institute, 1970 reported in R.M. Towill, 1976) of 0.72 m^{-1} with their mean post-construction value of 0.39 m^{-1} indicating a considerable improvement in mean water column clarity in Kapalama Basin after construction of the Reef Runway.

Water quality conditions in the study area have changed over the years (as noted above) as the result of various alterations to the physical environment. These changes have generally resulted in enhanced water quality for the marine environment by improving circulation in the Kapalama Basin and by moving sewage discharges to deeper, offshore waters. Collections of water quality data since these changes are scarce for the study area; no major environmental changes have taken place here since the construction of the Reef Runway and diversion of the Sand Island sewage effluent in the mid 1970s. We consider that "present" water quality includes any representative data available after 1976.

Kapalama Basin serves as the receiving basin for runoff, drainage, and seepage from more than 21,000 acres of watershed (GDSI, 1994), much of which is in residential and commercial/industrial land use. The natural function of this drainage basin is to serve a settling and initial mixing basin for land-derived materials.

Water quality in Kapalama Basin is constantly in a state of flux, being influenced by numerous factors which include: storm runoff, wind conditions, tidal state, and even the movements of large ships which can cause resuspension of sediments into the water column as they pass by. A major storm event will cause a temporary decrease in both salinity and temperature near stream mouths and the formation of plumes (often visible because of high turbidity/TSS levels) that spread out over much of the surface layer of the basin. Strong winds can resuspend sediments and nutrients into the water column, while tidal flushing and water exchanges between Kapalama Basin and Honolulu Harbor and Keehi Lagoon vary with wind direction.

Kapalama Basin is designated in HAR §11-54-06 (DOH, 2000) as a Class A embayment. The applicable water quality standards are summarized in Table 2.3.

Table 2.3 – State of Hawaii Water Quality Criteria for Embayments (HAR §11-54-06)(DOH, 2000)

Parameter	Geometric Mean value not to exceed this value	Value not to be exceeded more than 10% of the time	Value not to be exceeded more than 2% of the time
Total Nitrogen	200.0	350.0	500.0
(µg N/l)	*150.0*	*250.0*	*350.0*
Ammonia	6.0	13.0	20.0
(µg N/l)	*3.5*	*8.5*	*15.0*
Nitrate + Nitrite	8.0	20.0	35.0
(µg N/l)	*5.0*	*14.0*	*25.0*
Total Phosphorus	25.0	50.0	75.0
(µg P/l)	*20.0*	*40.0*	*60.0*
Chlorophyll α	1.50	4.50	8.50
(µg/l)	*0.50*	*1.50*	*3.00*
Turbidity	1.5	3.0	5.0
(ntu)	*0.4*	*1.0*	*1.5*

Two values: upper, "wet" criteria apply when the average fresh water inflow from the land equals or exceeds one percent of the embayment volume per day; lower, "dry" criteria apply when the average fresh water inflow from the land is less than one percent of the embayment volume per day.

Other "standards":

- pH units shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, storm drain or groundwater discharge may depress the pH to a minimum level of 7.0.
- Dissolved oxygen shall not decrease below 75% saturation.
- Temperature shall not vary more than 1 C° from ambient conditions.
- Salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

The State standards for embayments are divided into "wet" and "dry" categories depending upon the influx of freshwater (see footnotes in Table 1). Based upon estimated stream flows and basin volumes, we can compute the average number of days per year that the basin will qualify as a wet or dry embayment (Table 2.4). The percent of time that Kapalama Basin fits the "wet" embayment category is very low (3 percent or less). Therefore, in the discussion that follows, we will use the "dry" embayment State criteria as the standard for comparison with existing data.

Table 2.4 – Estimates of "Wet" and "Dry" Conditions in Kapalama Basin

1% basin volume (million gallons)	23.9
"wet embayment"	
rain days > 1% volume	11
% of time	3
"dry embayment"	
rain days < 1% volume	354
% of time	97

A synopsis of water quality data for Kapalama Basin is presented in Table 2.5, together with summary data for Honolulu Harbor and Ke'ehi Lagoon for comparative purposes. These data have been compiled from various studies (*AECOS*, 1979, 1982b; Oceanit Laboratories, 1990) plus several DOH monitoring stations (USGS, 1999). Most of the data for Kapalama Basin were collected near the bascule bridge.

Table 2.5 – Summary of Water Quality Data for Honolulu Harbor – Kapalama Basin – Keehi Lagoon complex. (1977 – Present)

Location		Salinity (‰)	Temp (°C)	DO (% sat)	Turbidity (ntu)	NO_3+NO_2 (µg/l)	NH_3 (µg/l)	TN (µg/l)	TP (µg/l)	Chl. a (µg/l)
	mean	33.7	25.4	95	2.7	1.8	3.7	167	22	0.32
Keehi Lagoon	stdev	3.2	1.6	10	1.2 – 5.8	0.5 – 5.7	1.4 9.7	- 102 272	- 11 - 47	0.13 - 0.77
	n	*282*	*213*	*209*	*284*	*42*	*42*	*180*	*180*	*41*
	mean	34.6	25.7	95	1.9	2.2	5.1	137	31	0.26
Kapalama Basin	stdev	0.6	1.5	9	1.2- 2.9	1.0 - 4.8	2.5 10.3	- 97 - 193	16 - 59	0.08 - 0.84
	n	*38*	*37*	*36*	*19*	*19*	*17*	*19*	*19*	*19*
	mean	34.9	25.9	85	0.7	4.3	6.8	124	20	0.36
Honolulu Harbor	stdev	0.3	0.8	21	0.3 – 1.5	2.0 - 9.0	3.2 14	– 101 153	- 13 - 32	0.14 - 0.92
	n	*17*	*13*	*17*	*24*	*21*	*10*	*21*	*21*	*21*

— grayed cells indicate that mean (or geometric mean) values are noncompliant with an applicable State water quality criterion.

There appears to be a gradient for most water quality parameters within the Honolulu Harbor – Kapalama Basin – Keehi Lagoon complex. Thus, salinity tends to increase from Ke'ehi Lagoon, through Kapalama Basin and into Honolulu Harbor, as does temperature and nutrient levels (with the exception of total phosphorus), while turbidity and DO levels tend to decrease. These gradients likely reflect the strong influence of water exchanges between these basins on water quality characteristics.

It can be assumed that the poorest water quality within Kapalama Basin occurs in the vicinity of the mouth of Kapalama Stream and this is substantiated from older studies in the area (Dillingham, 1971). Water quality then likely improves as one moves towards either of the two exits from this basin; i.e., Honolulu Harbor or Keehi Lagoon. Water quality in Kapalama Basin typically does not meet State criteria for turbidity, ammonia, and total phosphorus.

Honolulu Harbor is an impaired waterbody. It is listed as a Water Quality-Limited Segment (WQLS) on the Hawaii Department of Health's Clean Water Act (CWA) §303(d) List of Impaired Water Quality Bodies for Hawaii (DOH, 1998) and is also listed on the U.S. Environmental Protection Agency's Revised 1998 List (EPA, 1998). The entire harbor, including Kapalama Basin and Keehi Lagoon, out to the 30-foot depth contour, is listed.

The pollutants for which the harbor is listed are nutrients, metals, suspended solids, pathogens, and turbidity. Eventually, a study to determine the Total Maximum Daily Load (TMDL) of pollutants that can be discharged into the harbor without it violating Hawaii's Water Quality Standards will be conducted for Honolulu Harbor. At that time, the Department of Health may impose load reductions on discharge permits (i.e., NPDES permits) issued for Honolulu Harbor and may impose additional load reductions or other requirements, if necessary, in order for the TMDLs to be met.

2.8 Sedimentation

Sedimentation in the harbor is primarily due to the deposition of stream borne sediments, with the harbor essentially acting as a settling basin between the stream mouths and the open ocean. The shoaling rate depends upon the stream flows and the associated sediment loads. Typically in Hawaii, most of the sediment load is discharged during relatively infrequent storm events.

Records maintained at the U.S. Army Corps of Engineers from 1948 to 1972 indicate that the federal project area in Honolulu Harbor has a maintenance dredging cycle of approximately 5 to 10 years, and the average volume of material removed per cycle is 200,000 cubic yards (U.S. Army Engineer District Honolulu, 1975).

Records are available for the post 1986 utilization of the offshore dump site off Honolulu Harbor. The site has been accessed nine times for Honolulu Harbor dredge spoil disposal. Maintenance dredging was conducted in 1968, 1972, 1977, 1983, 1990 and 1999. Total volume removed was approximately 1,300,400 cubic yards, an average of almost 220,000 cubic yards per occurrence. In the same period, there were four other construction related dredging projects under the jurisdiction of either the Corps, the State or the City that utilized the disposal site, with a total volume of 1,167,000 cubic yards.

The Kapalama Stream appears to contribute little to the sediment deposition in the harbor. A comparison of two bathymetric surveys covering the area between Piers 38 and 39 where the stream enters the harbor, dated 1982 and 1991, indicated negligible depth changes over the ten-year period. There was no record of maintenance dredging in the area over that time frame.

Existing information on bottom material composition includes foundation investigations for improvements at Pier 37 (Geolabs-Hawaii, 1983) and at Piers 39/40 (Dames & Moore, 1991). Borings indicate that the bottom in the area consists of harbor mud, underlain by alternating layers of silt/clay deposits and coral sand/gravel of marine or lagoon origin.

2.9 Sediment Characteristics

Four sediment samples from the project area were obtained by SEI divers using a four-foot coring device. The core sleeves were immediately refrigerated and later emptied into pre-cleaned glass gallon jars. The sediment in each individual jar was homogenized and then equal portions of sediment from each jar transferred to two, pre-cleaned 16-ounce jars. The 16-ounce jars, representing a single, composited sample, were sent for analysis to EnviroMatrix Laboratory located in San Diego, California.

The resulting single sample was analyzed for hazardous waste characteristics, including the EPA procedure for determining the mobility of organic and inorganic contaminants present in liquid, solid, and multiphasic waste: the Toxicity Characteristic Leaching Procedure (TCLP). The sample was analyzed for TCLP metals, specific aroclors or PCBs (polychlorinated biphenyls), and specific PAHs (polycyclic aromatic hydrocarbons). Analysis results are presented in Table 2.6.

Table 2.6 – Sediment Analysis Results

ANALYTE	SAMPLE ID		Analysis Date Analyst ID
	Composite	Method	
Total Solids (%)	61.2	----	04/12/02 EMA
Flashpoint	Negative	1030	04/16/02 EMA
TPH as gas (mg/kg)	<16	8015B	04/16/02 EMA
TPH as diesel (mg/kg)	<16	8015B	04/16/02 EMA
TPH as oil (mg/kg)	126	8015B	04/16/02 EMA
UNITS	mg/L	TCLP 1311	
TCLP Barium	<1	3020/6020	04/15/02 EMA
TCLP Cadmium	<0.5	3020/6020	04/15/02 EMA
TCLP Chromium	<1	3020/6020	04/15/02 EMA
TCLP Lead	<1	3020/6020	04/15/02 EMA
TCLP Silver	<0.1	3020/6020	04/15/02 EMA
TCLP Arsenic	<0.05	3020/6020	04/15/02 EMA
TCLP Mercury	<0.001	7470	04/15/02 EMA
TCLP Selenium	<0.1	3020/6020	04/15/02 EMA
UNITS	µg/kg		
PCB Aroclor 1016	<16	8082	04/13-23/02 EMA
PCB Aroclor 1221	<16	8082	04/13-23/02 EMA
PCB Aroclor 1232	<16	8082	04/13-23/02 EMA
PCB Aroclor 1242	<16	8082	04/13-23/02 EMA
PCB Aroclor 1248	<16	8082	04/13-23/02 EMA
PCB Aroclor 1254	<16	8082	04/13-23/02 EMA
PCB Aroclor 1260	<16	8082	04/13-23/02 EMA
Benzene	<3.3	8260	04/12/02 EMA
Toluene	<3.3	8260	04/12/02 EMA
Ethylbenzene	<3.3	8260	04/12/02 EMA
Total Xylenes	<8.2	8260	04/12/02 EMA
Naphthalene	<16	8270	04/11-17/02 EMA
Acenaphthylene	<16	8270	04/11-17/02 EMA
Acenaphthene	<16	8270	04/11-17/02 EMA
Fluorene	<16	8270	04/11-17/02 EMA
Phenanthrene	17	8270	04/11-17/02 EMA
Anthracene	<16	8270	04/11-17/02 EMA
Fluoranthene	76	8270	04/11-17/02 EMA
Pyrene	153	8270	04/11-17/02 EMA
Benzo(a)anthracene	43	8270	04/11-17/02 EMA
Chrysene	59	8270	04/11-17/02 EMA
Benzo(b)fluoranthene	106	8270	04/11-17/02 EMA
Benzo(k)fluoranthene	104	8270	04/11-17/02 EMA
Benzo(a)pyrene	184	8270	04/11-17/02 EMA
Indeno(1,2,3-cd)pyrene	104	8270	04/11-17/02 EMA
Dibenz(a,h)anthracene	<16	8270	04/11-17/02 EMA
Benzo(g,h,i)perylene	126	8270	04/11-17/02 EMA

This list includes toxic substances typically found in harbor sediments and was based upon requirements specified by J. Hernandez of the City and County Solid Waste Division for disposal of sediment at the Waimanalo Gulch Land Fill. Results are reported as weight of analyte per kilogram dry-weight of sediment.

With the exception of substances related to petroleum, all of the analyses (TCLP metals and PCB aroclors) yielded nothing detected in the sample. The analysis called TPH (total petroleum hydrocarbons) as oil yielded a value of 126 mg/kg. This measurement includes the heaviest, least volatile oils compared with TPH as gasoline and TPH as diesel measurements. In all cases, the petroleum is reported simply as weight per unit of (dry) sediment.

Oil pollutants incorporated into sediment below the aerobic surface layer can remain unchanged and potentially toxic to marine organisms for long periods, since its rate of bacterial degradation is slow (EPA, 1986). Persistence of unweathered oil within sediments could have a potentially adverse, long-term effect on the structure of a benthic community or cause the demise of sensitive, ecologically important species. However, the extensive bioturbation[1] of these harbor sediments as evidenced by the numerous burrows seen in photographs made of the bottom in the project area would suggest long-term accumulation of unweathered oils is unlikely. The finding perhaps indicates low-level chronic introductions of oil to the sediment as might be expected from an area of intensive ship operations in a commercial harbor (see Kimura International et al., 1998).

Polynuclear aromatic hydrocarbons (PAH or PNA) are a diverse class of high-carbon, low-hydrogen compounds formed by incomplete combustion of other organic hydrocarbons with insufficient oxygen. Chemically, they are typically characterized by six-sided benzene rings. As a group, PAHs are considered priority pollutants and carcinogens (EPA, 1986). Some are mutagenic. Most of these compounds are sparingly soluble in water, but comprise the more toxic components of petroleum products. Previous sediment analyses and bioassay/bioaccumulation testing in the Pier 51A project area (Kimura International et al., 1998 — "Site U3") revealed toxicity to amphipods in the sediment solid phase bioassay (EPA & ACOE, 1997). PAHs were the chemicals suspected as the cause of toxicity to amhipods. Nine PAH compounds were bioaccumulated in a clam (Macoma) used for testing purposes. Consequently, sediments from this area did not pass ocean disposal criteria.

Individual core samples (composites were used for the bioassay/bioaccumulation tests) were later analyzed to better define the area of contamination with PAHs. However, concentrations of total PAHs in the cores were over 10,000 ppb. TPH was reported as 2510 mg/kg sediment dry weight for the original sample used in the bioassay (Kimura International et al., 1998). Results reported here from a composite sample collected in the same area off Pier 51A show concentrations of individual PAHs that are some two orders of magnitude less than those reported in 1998. Attempts to establish, in advance, the acceptability of the sediment for landfill

[1] Bioturbation —refers to biological activities that occur at or below the sediment surface which cause a sediment deposit to become mixed: burrowing and boring by organisms constantly disturb the sediment, mixing the sediment layers, enhancing organic decomposition, nutrient cycling, redistribution of organic material, and oxygenation of the sediment.

disposal met with a lack of specific criteria established by either the State of Hawaii, Department of Health, or the two (private and public) landfills located on the Island of O'ahu. Although additional testing may be called for after dredging and drying of the sediment, this process can be expected to further reduce the concentrations of PAHs by mixing and exposure to the atmosphere.

2.10 Marine Biology

The marine biology of the project site was evaluated using observations and photographs taken during the sediment sampling, and results of many previous biological surveys conducted throughout the harbor. A site-specific field biological survey of the project site was not conducted because the area has been previously dredged and studies elsewhere in the harbor have shown that the resident marine macrobiota of this type of ecosystem is not well-developed, is adapted to soft bottom and generally turbid conditions, and consists primarily of infaunal invertebrates.

The area around Pier 51A has a sandy-mud or mud bottom (Figure 2.1) and is 12 meters (36 feet) deep at its shallowest point (Scott Sullivan, SEI, *pers. comm.*). This bottom type is dominated by the settlement of small particulates brought into the harbor from streams and/or redistributed by the passage of larger ships churning up the bottom.

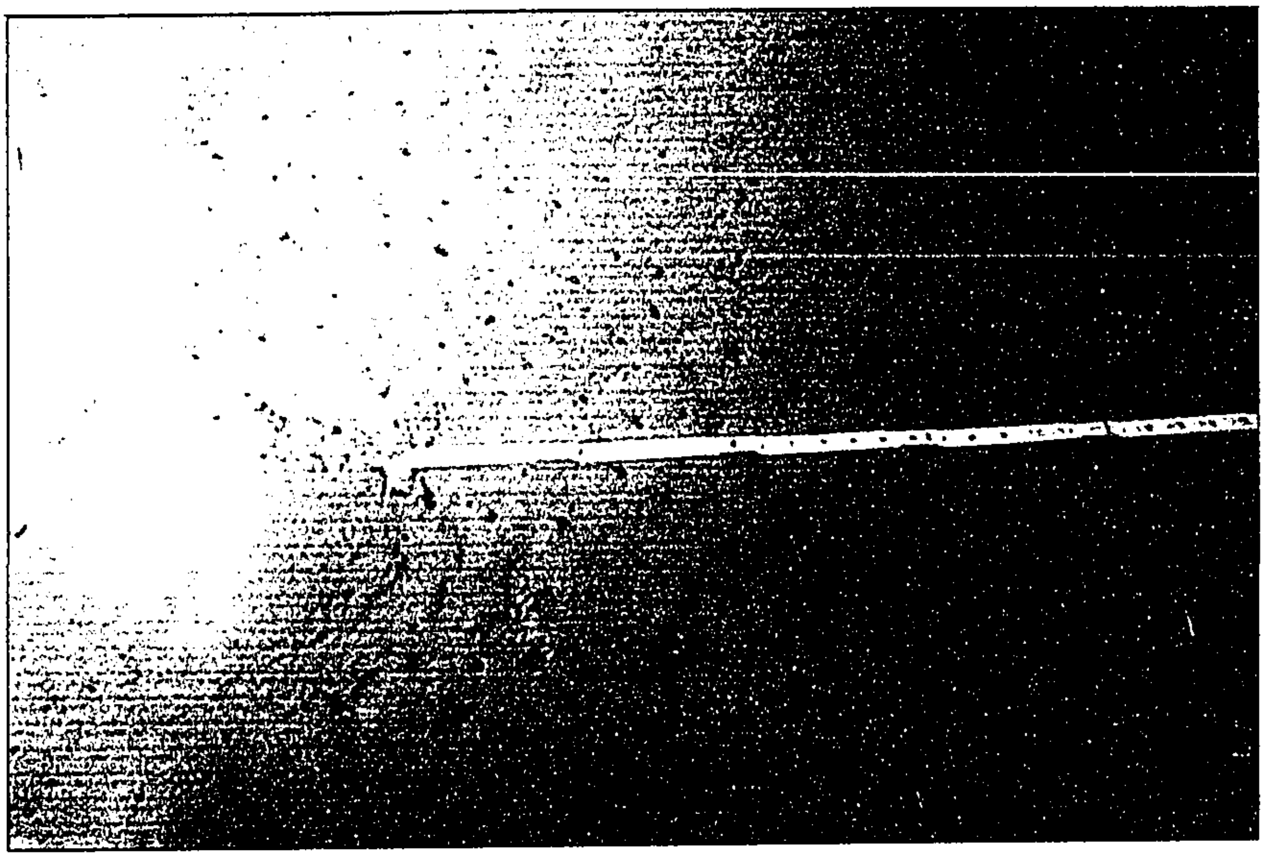


Figure 2.1 – Typical View of the Bottom in the Area Proposed for Dredging

Note extensive evidence of infaunal life (borrow openings and mounds) and absence of hard bottom outcrops.

The assemblages of benthic organisms in Honolulu Harbor are limited by substratum characteristics. Therefore, the biological communities reported in earlier studies as living on similar substrata are an adequate indication of the organisms likely to be found off Pier 51A. The most likely community supported by the soft bottom of the previously dredged area off Pier 51A consists of infaunal organisms. Polychaetes and crustaceans dominate the infaunal communities of Honolulu Harbor (Environmental Consultants Inc., 1978 and *AECOS*, 1979). Alpheid shrimp, tubeworms, crabs, micromollusks, hydroids, and bryozoans have been reported as constituents of the infaunal community of silty-sand substrates (McCain and Coles, 1973; R.M. Towill, 1982; and *AECOS*, 1988).

The benthic ecosystem close to the shore at Pier 51A may be similar to the benthic ecosystem observed off Pier 16 in 1998 (Coles and DeFelice, 1999). Sponges and ectoprots are the dominant groups living on the bottom and ascidians may be abundant -- suggesting selection for filter feeding, sedimentation tolerant organisms (Coles and DeFelice, 1999). However, these groups are dependent upon occurrences of hard substratum to which the animals attach. Without such outcrops, the deep harbor benthic community is dominated by burrowing forms, especially polychaetes and crustaceans.

The vertical surfaces of Pier 51A may provide adequate substrate for another biological community. Previous studies have found coral (including *Pocillopora* spp., *Porites* spp. and *Montipora* spp.) attached to vertical surfaces (*AECOS*, 1988) and a fouling community composed of turf algae, sponges, hydrozoans, oysters, and barnacles (AECOS, 1988; Coles and DeFelice, 1999).

The mid-water zone provides habitat for phytoplankton, zooplankton, and mid-water fishes.

Many of the alga and macroinvertebrate species in Honolulu Harbor are likely to be nonindigenous species introduced from areas outside of Hawaii (Coles and DeFelice, 1999).

Near Pier 51A, there would appear to be no rare, threatened, or endangered species as listed by USFWS (1996; Federal Register, 1999, 2001). Further, habitats present are not those that would be important to any listed species. However, several species of water birds are known from the sandy beach areas and reef flat remnants in Ke'ehi Lagoon (see Berger and Walker, 1976 and Walker, 1978).

2.11 Adjacent Harbor Operations

The Sand Island Container Facilities are located adjacent to the project site. Both Matson Navigation Company and CSX Lines container facilities are based there. Kalihi Channel was once a second entrance to Honolulu Harbor. The Sand Island Bascule Bridge, formerly a drawbridge, is now in a fixed position, and a second fixed bridge was recently constructed to accommodate the increased traffic to the Sand Island container yards. Passage beneath the bridges is now limited to small boats, with vertical clearances of approximately 15 feet or less. With the Kalihi Channel inaccessible, all ships entering the Kapalama Basin must turn in the basin. This includes all container ships berthing at Piers 51, 52 and 53. Tug assist is required for berthing and turning the container ships and barges. Piers 51, 52 and 53 are in constant use and vessel traffic is heavy.

In general, there are two users at Pier 51A: CSX and Hawaii Fueling Facilities Corporation (HFFC). CSX ships that use Pier 51A range in length from 700' (CSX Discovery) to 893' (CSX Reliance, CSX Spirit). Any vessels longer than 900' would have difficulty turning in the Kapalama Basin. The largest tanker using the pier has been the Torm Kirsten (LOA-749'). HFFC, who brings in aviation gas through various shipping agents (and tankers), is unable to utilize the berth with a full load due to insufficient depth. The tankers also overhang due to the existing location of the fuel riser at 51A, and while other risers are available such as at 51B where the depth is -40', the availability of the berth is minimal due to CSX and Matson operations.

CSX typically has two ships dock at Pier 51A every week. Typically the first ship arrives Sunday night and leaves Tuesday morning, and the second ship arrives Wednesday afternoon and departs Thursday night. HFFC averages one tanker at the dock every month. The ship usually arrives on a Thursday, Friday or Saturday, carrying about 300,000 barrels of fuel; offloading requires about 25 hours.

3.0 IMPACTS

3.1 Impacts During Dredging

Suspension of silt, sedimentation, and elevated turbidity levels are all expected responses to dredging near Pier 51A in Honolulu Harbor, even with the use of appropriate best management practices. However, the proposed dredging is not anticipated to have a significant, long-lasting effect on the resident marine biota of Honolulu Harbor for several reasons. First, dredging has taken place in Honolulu Harbor at regular intervals, and based upon past observations, impacts will be temporary, and the long-term effects are expected to be negligible. Adjacent areas have been recently dredged, with no long-term adverse impacts. For example, maintenance dredging of Honolulu Harbor was conducted in 1990 and 1999 by the U.S. Army Corps of Engineers, and 135,000 and 191,000 cubic yards of material were removed, respectively. By contract, less than 2,000 cubic yards of material will be removed during this project.

Second, the harbor is also subject to other sources of turbidity and sediment resuspension. Ship activities and stream discharges cause turbidity plumes that last from hours to weeks (Oceanit Laboratories, Inc., 1990). Oceanit, during their fieldwork for the environmental assessment of the Aloha Tower redevelopment, frequently observed turbidity plumes generated by tugboats assisting large ships. However, it was also noted that the ship or tug generated sediment plumes settle rapidly, and disappeared from view within an hour.

Third, the sessile marine biota in the area are limited in both abundance and diversity, and comprised primarily of organisms adapted to or favored by a sedimentary and turbid environment. Benthic organisms disturbed or displaced will certainly be replaced by rapid recruitment following dredging activities. Fishes displaced by dredging may leave the area temporarily and return when conditions return to normal.

Fourth, currents in the project vicinity are relatively weak. Suspended sediments are therefore expected to settle out within the general project vicinity in Honolulu Harbor.

And finally, construction generated turbidity will be relatively short in duration; dredging operations are only expected to last one to two weeks. Silt curtains, and a sealing clamshell bucket will be used and should further minimize turbidity.

3.2 Impacts of Dredge Material Disposal

The dredge material, following containment and air-drying, will be disposed of at an approved on-land disposal site. There are therefore not expected to be any impacts of dredge material disposal. Negative impacts could only occur if there is any leakage of the dredge material. Special operational and design precautions are therefore being taken to prevent dredge material leakage. These include use of a sealing clamshell bucket, a watertight dredge scow for material transport, an offloading ramp with a catchment system to contain any spillage, and a specially designed containment and drying area. The project specifications require that the dredging contractor submit a work plan for approval prior to the start of dredging, including a description of the dredging, transportation, and offloading methodology to be employed to prevent any discharge of either sediment or water back into the harbor or coastal waters.

The dredge material will be loaded onto a watertight dredge scow and towed to Kalaeloa Barbers Point Harbor. The material will then be placed in a specially designed containment area, where it will be air-dried. The containment area will be relatively small in footprint (approximately 0.7 acres), with an impermeable barrier on the bottom, overlain by a 4" thick sand cushion and geotextile filter fabric to protect the barrier during handling of the spoil. The containment area will be surrounded by a 4-foot-high earthen berm also covered by the impermeable barrier, and protected by a silt fence to prevent erosion of the berm material. Dredge spoil thickness within the containment area will be about 3 feet. After drying, the dredge spoil will be disposed of at an approved on-land disposal site.

3.3 Long Term Impacts

There are expected to be no negative long-term impacts of the proposed dredging because the dredging will not result in the construction of new facilities or increase in vessel traffic. There will be beneficial impacts associated with safer operations resulting from the increased maneuverability provided by the new dredge area.

4.0 ALTERNATIVES CONSIDERED

4.1 Dredging

The dredging alternatives considered are no dredging (no action) or the project as described in this document. No dredging would result in a continuation of the current situation. Dredging of the project area was originally scheduled to occur during the 1999 US Army corps of Engineers maintenance dredging project of the entire harbor. Sediment from the project area, however, was not approved for disposal at the ocean dump site, and thus the area was not dredged. Current usage at the pier requires that container and fuel tanker vessels overhang, or extend past, the end of the pier. Depths in the overhang area are presently as shallow as –36 feet, which inhibits maneuvering and berthing by fully loaded vessels. Tankers occasionally have to lighten their load to enter the harbor and dock at Pier 51A.

For these reasons, it is proposed to dredge the overhang area. Dredging will permit safer navigation and berthing, particularly for the tankers using the pier. Safer navigation and berthing will in turn reduce the environmental risks of possible spills and ships hitting bottom.

4.2 Dredge Material Dewatering / Drying

The dredge material will be contained and air-dried in a specially designed containment area with an impermeable barrier on the bottom, overlain by a 4" thick sand cushion and geotextile filter fabric, and surrounded by a 4-foot-high earthen berm also covered by the impermeable barrier

Containment areas considered included the vicinities of Sand Island and Snug Harbor in Honolulu Harbor, and Kalaeloa Barbers Point Harbor. Available space for containment is problematic on Sand Island and Snug Harbor. Several possible sites were discussed, and each would have required transport of the wet dredge material by truck across heavily used industrial areas, parking lots and road. The logistical impacts on traffic, and negative environmental impacts of spills and leakage from the truck ruled out containment in the general Honolulu Harbor area.

Containment in Kalaeloa Barbers Point Harbor is the preferred alternative for several reasons. First, the material can be transported to the site offshore in a floating watertight scow. Second, Barbers Point has extensive, open dock areas with light traffic. Third, Barbers Point is close to the likely final disposal area in Nanakuli, which minimizes the need for trucking.

4.3 Dredge Material Disposal

The initial investigation identified four potential sites for final spoils disposal. They included: 1) ocean dumping at the off-shore EPA site; 2) utilizing the spoils as contaminated fill on the reef runway at Honolulu International Airport; 3) landfilling the spoils at the City and County's

Waimanalo Gulch public landfill in Nanakuli, Oahu; and 4) landfilling the spoils in the private PVT landfill also located in Nanakuli, or other approved on-land disposal site.

The first three options are not viable. Budgetary and timeline constraints prohibited the conductance of environmental studies such as bioassay/bioaccumulation to determine the effect of dumped spoils on indigenous marine life, therefore the EPA's offshore dump site is an infeasible alternative. Discussions with DOT – Airport personnel indicated that their permit to utilize contaminated soil as fill for the reef runway has expired, thus eliminating this site from potential consideration. The City and County's landfill at Waimanalo Gulch is nearing its capacity. Community residents are reluctant to approve an expansion of the landfill. Therefore, due to capacity constraints, the landfill no longer accepts soil from outside generators and removed this option from consideration.

The privately operated PVT landfill in Nanakuli will accept construction debris, including soils contaminated with petroleum products. Operation of the landfill is in accordance with State Department of Health Solid Waste Regulations (Chapter 342 HRS). The project specifications require testing of the dredge spoil in accord with the landfill requirements and approval from the landfill prior to commencing disposal. The PVT landfill is prohibited by regulation from accepting bulk or non-containerized liquid, and thus the landfill imposes restrictions on the moisture content of the material to be disposed. The drying to be accomplished at Kalaeloa Barbers Point Harbor will reduce the moisture content of the dredge spoil to an acceptable level prior to disposal at the landfill. On-land disposal sites other than the PVT landfill, as approved by the State Department of Transportation, may be utilized for dredge spoil disposal following drying.

5.0 MITIGATION

Several mitigation measures and best management practices will be employed to reduce possible impacts of the project. These are discussed below.

5.1 Environmental Protection Plan

The dredging specifications require that before commencement of the work, the Contractor shall submit in writing an Environmental Protection Plan. Work shall not commence until acceptance of the plan by the State. The Environmental Protection Plan shall include the following items:

A. Environmental training for Contractor personnel on the job.
B. The Contractor's plan for installing the required turbidity barriers around the dredge area, and other mitigation measures to control turbidity in the harbor basin and maintain State of Hawaii water quality standards.
C. The Contractor's plan for fuel storage, spill prevention, rubbish disposal, hazardous and solid waste material disposal and cleanup. The Contractor shall take special measures to prevent chemicals, fuels, oil, grease, waste washings, or any other deleterious materials from entering State waters.
D. The Contractor's plan for dust and noise control measures.
E. The Contractor's plan for erosion control measures as necessary.

5.2 Water Quality Monitoring

The contract documents will require the Contractor to conduct water quality sampling prior to and during the performance of dredging services. Pre-dredging water quality sampling and analysis will be required of the Contractor to determine the baseline water quality. Water quality monitoring during dredge operations will be used to assess whether dredging is impacting harbor water quality outside of the turbidity barrier surrounding the dredging area.

No DOH 401 water quality certificate will be sought as part of this project. However, the contract documents will stipulate that the Contractor conduct sampling in accordance with minimum DOH 401 water quality certificate requirements for construction projects lasting less than one month. The following table lists parameters, frequencies and sample depths for both the preliminary and during construction sampling.

Table 5.1 – Water Quality Monitoring Parameters, Frequencies and Depths

Parameter	Preliminary Sampling		Monitor Sampling	
	Frequency	Depth (ft MLLW)	Frequency	Depth (ft MLLW)
pH	10	-20	Daily	Surface, -20
Turbidity	10	-20	Daily	Surface, -20

Total Suspended Solids (TSS)	10	-20	Daily	Surface, -20
Dissolved Oxygen (DO)	10	-20	Daily	Surface, -20
Salinity	10	-20	Daily	Surface, -20
Temperature	10	-20	Daily	Surface, -20

Ten preliminary sampling events will be conducted over a two-week period at a single point within the project limits at the mid-water depth (approximately 20 feet.) From these ten events, a mean baseline value and a standard deviation will be established for each parameter. To ensure that water quality is maintained during the course of dredging, contract documents will require the Contractor to conduct daily sampling at a location 1 meter outside of the silt barrier in the vicinity of that day's operations. Daily monitoring will consist of sampling at two depths: Near-surface and mid-water. The water quality monitoring requirements are contained in the construction specifications for the project (Article XII - Environmental Protection).

5.3 Turbidity Barriers

For dredging operations, turbidity barriers (silt curtains) will be specified to prevent silt migration from the project limits. The turbidity curtains will surround the entire project area in a semi-circle and be positioned in a manner that provides 50 feet clearance from the edge of the project limits in order to allow enough room for dredging operations. This may encroach upon Pier 51A operations. The Contractor would be required to coordinate dredge activities with the Pier 51A tenant, or relocate the silt barrier on a daily basis to encircle only that day's dredging operations.

Turbidity barriers will consist of a floating boom and a suspended curtain hanging down 35 feet from the surface of the water. The lower 80% of these curtains are constructed with a filter fabric that allows for water movement due to currents and tidal fluctuation, while preventing the migration of silt. For curtain sections near the shoreline, the curtains will have a sloped bottom to maintain a minimum clearance of 1 ft above the harbor floor. Buoys and anchors will be used to hold the turbidity barrier in place and minimize movement.

5.4 Dredge Material Containment and Drying

The dredge material will be loaded onto a watertight dredge scow and towed to Kalaeloa Barbers Point Harbor. The material will then be placed in a specially designed containment area, where it will be air-dried. The containment area will be relatively small in footprint (approximately 0.7 acres), with an impermeable barrier on the bottom, overlain by a 4" thick sand cushion and geotextile filter fabric to protect the barrier during handling of the spoil. The containment area will be surrounded buy a 4-foot-high earthen berm also covered by the impermeable barrier, and protected by a silt fence to prevent erosion of the berm material. Dredge spoil thickness within the containment area will be about 3 feet.

5.5 Disposal

Following drying, the dredge spoil will be disposed of at an approved on-land disposal site. Prior to commencing disposal the Contractor shall obtain from the landfill facility the dredge spoil testing requirements necessary for acceptance of the material for disposal, and shall submit a laboratory test report to the landfill operators or their environmental consultant as required by the landfill facility.

6.0 PERMITS

Dredging activities are subject to Department of the Army permit requirements under Section 10 of the Rivers and Harbors Act. A Section 10 application will be completed and a permit obtained as part of this project. A Hawaii Coastal Zone Management (CZM) Program consistency determination review and approval by the State Department of Business, Economic Development & Tourism, Office of Planning, is also required for department of the Army permit approval.

This project will only consist of dredging, and no discharges into the water are anticipated. No fill will be placed in the water, and no side-casting of dredge material or de-watering of the dredge spoil back into U.S. waters will be permitted. Therefore, no Department of the Army Section 404 (Clean Water Act) permit or State Department of Health Section 401 Water Quality Certification will be required.

A NPDES permit will not be sought for this dredge project. Present regulations require NPDES permits for construction sites exceeding 5 acres. The contract documents for this project will specify a containment area that is less than 1 acre. This is to abide with new regulations, effective March 2003, that will require NPDES permits for construction sites exceeding 1 acre if the Notice To Proceed has yet to be issued. However, regardless of construction site size, no NPDES permit is required if no runoff is expected to reach state waters. Dredge spoil containment/remediation areas will be designed in a fashion to prevent any runoff from reaching state waters.

7.0 AGENCIES AND ORGANIZATIONS CONSULTED

State of Hawaii, Department of Transportation, Harbors Division
State of Hawaii, Department of Health, Clean Water Branch
State of Hawaii, Department of Land & Natural Resources, Land Division
U.S. Army Corps of Engineers, Honolulu Engineer District, Regulatory Branch
CSX Lines
Airport Group International
Hawaii Pilots Association
Waldron Steamship Company

8.0 DETERMINATION

The proposed Pier 51A dredging project will not have significant environmental effects. A finding of no significant impact (FONSI) has been issued for the project.

1. The proposed project will not involve an irrevocable commitment to the loss or destruction to any natural or cultural resource. The project involves dredging in an area that has been previously dredged. There are no natural or cultural resources at the site.

2. The proposed project will not curtail the range of beneficial uses of the environment. The project site is in Honolulu Harbor, the major commercial port in the state. The project will enhance the beneficial use of the harbor, by allowing safer maneuverability and berthing.

3. The proposed project will not conflict with the State's long-term environmental policies. The project is consistent with the State's policy to conserve natural resources, enhance the environment and create opportunities for the residents of Hawaii by providing for safer use of the pier and reducing the risk of spills or accidents.

4. The proposed project will not substantially affect the economic or social welfare of the community or State. The project will improve the economic and social welfare of the State by allowing more efficient and safer use of Pier 51A.

5. The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities. The project will not result in the construction of new facilities or increase usage of existing ones.

6. The proposed project will not affect public health. There are no anticipated impacts of the project on public health.

7. The proposed project will not involve a substantial degradation of environmental quality. The project site has been dredged several times previously, and therefore would not be degraded by the proposed dredging.

8. The proposed project will not cumulatively affect the environment. The actual dredging is anticipated to be completed in one to two weeks. In addition, it will not result in increased usage of the pier. Therefore, there should be no cumulative effects on the environment.

9. The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat. No endangered species of flora or fauna are known to exist in the project site.

10. The proposed project will not significantly affect air or water quality or ambient noise levels during dredging. A turbidity barrier (silt curtain) will be required to isolate the dredging activity from the harbor waters, and daily water quality monitoring will be required to insure the effectiveness of the barrier and insure that there are no impacts to

harbor water quality outside of the dredge area. There will be no lasting impacts on air or water quality or ambient noise.

11. The various elements of the proposed projects will not be located in any environmentally sensitive area, such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, freshwater or coastal waters.

12. The proposed project will not affect scenic vistas. The project site is on the seafloor inside Honolulu Harbor.

13. The proposed project will not require significant short term or long-term energy consumption. The project may actually reduce overall energy consumption by allowing more efficient use of the pier.

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APPENDIX A

DRAFT EA REVIEW COMMENTS AND RESPONSES

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII

OFFICE OF ENVIRONMENT QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

July 22, 2002

Mr. Marshall Ando
Harbors Division, Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813

Mr. Scott Sullivan
Sea Engineering Inc.
Makai Research Pier
41-202 Kalaniana'ole Highway, No. 8
Waimanalo, Hawai'i 96795

Dear Messrs. Ando and Sullivan:

Thank you for your submittal of the draft environmental assessment (DEA) for the dredging of a portion of Honolulu Harbour in the vicinity of the west end of Pier 51A in the judicial district of Honolulu. We understand that the Department will not be seeking an NPDES permit, or a Section 401 Clean Water Act water quality certification from the Department of Health, as the Department anticipates transporting the dredge spoils to Kalaeloa for drying and eventual disposal in a private landfill in Nanakuli. We have reviewed the document and submit the following comments for your consideration and response.

1. DISPOSAL OF DREDGING SPOILS IN A PRIVATE LANDFILL: We are unfamiliar with the private landfill in Nanakuli and the conditions of their Solid Waste Management Permit. Please consult with Mr. Steven Chang, Chief of the Solid and Hazardous Waste Branch of the Department of Health as to the permitting/compliance history and suitability of the private landfill to accept dredge spoils. Please include the results of such consultation in the final environmental assessment for this project.

Thank you for the opportunity to comment. If there are any questions, please call Leslie Segundo, Environmental Health Specialist, at (808) 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

Enclosures

SE Sea Engineering, Inc.
Makai Research Pier, 41-202 Kalaniana'ole Hwy, Suite 8, Waimānalo, Hawai'i 96795-1820
(808) 259-7966/FAX (808) 259-8143 E-MAIL: seaeng@lava.net

August 13, 2002

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 S. Beretania Street, Suite 702
Honolulu, HI 96813

Dear Ms. Salmonson:

Subject: Dredge Ewa End of Pier 51A, Honolulu Harbor, Oahu, Hawaii. Job H.C. 10118

Thank you for your letter dated July 22, 2002, commenting on the draft environmental assessment (DEA) for the subject project. The following information is provided in response to your question regarding the disposal of dredge spoil in a private landfill.

There are existing private landfills, such as the PVT landfill in Nanakuli, that are permitted to dispose of construction debris, including soils such as will result from the proposed dredging. Operation of the landfills is in accordance with State Department of Health (DOH) Solid Waste Regulations, Chapter 342 HRS. I have discussed the project and proposed on-land disposal of dried dredge spoil with Mr. Gary Siu of the Solid Waste Management Section, Solid and Hazardous Waste Branch, DOH. He informed me that the permitted landfills have a required screening process to be accomplished prior to their acceptance of material for disposal. The screening includes analytical testing to characterize the nature of the material and possible contamination, and evaluation of material suitability for disposal under the permit requirements by an environmental consultant. The project specifications require the dredging contractor to accomplish the following: "Contractor shall seek prior approval from landfill before commencing disposal. Contractor shall submit a laboratory test report to the landfill facility or its environmental consultant for review. The report shall include all test data, description of sampling procedures and sample locations, etc. as required by the landfill facility."

Should you have any further questions or desire additional information regarding this project please call Scott Sullivan at 259-7966.

Sincerely

Scott P. Sullivan
Vice President

Cc: Marshall Ando, State Department of Transportation, Harbors Division

APPENDIX B

COASTAL ZONE MANAGEMENT (CZM) CONSISTENCY CERTIFICATION

DREDGING EWA END OF PIER 51A
HONOLULU HARBOR, OAHU, HAWAII

DEPARTMENT OF TRANSPORTATION, HARBORS DIVISION
STATE OF HAWAII

HAWAII CZM PROGRAM
ASSESSMENT FORM

RECREATIONAL RESOURCES

Objective: Provide coastal recreational opportunities accessible to the public.

Policies

1) Improve coordination and funding of coastal recreation planning and management.

2) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

   a) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

   b) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;

   c) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

   d) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

   e) Encouraging expanded public recreational use of County, State, and Federally owned or controlled shoreline lands and waters having recreational value;

   f) Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;

   g) Developing new shoreline recreational opportunities, where appropriate, such as artificial reefs for surfing and fishing; and

   h) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, County planning commissions; and crediting such dedication against the requirements of section 46-6.

Check either "Yes" or "No" for each of the following questions.

	Yes	No
1. Will the proposed action involve or be near a dedicated public right-of-way?		x
2. Does the project site abut the shoreline?		x
3. Is the project site near a State or County park?		x
4. Is the project site near a perennial stream?		x
5. Will the proposed action occur in or affect a surf site?		x
6. Will the proposed action occur in or affect a popular fishing area?		x
7. Will the proposed action occur in or affect a recreational or boating area?		x
8. Is the project site near a sandy beach?		x
9. Are there swimming or other recreational uses in the area?		x

Discussion

2. The project site is located in the water, adjacent to the Honolulu Harbor shoreline.

7. The project site is located in the commercial port of Honolulu Harbor. Although "recreational" boats pass through the harbor, recreational boating activities are not permitted within the harbor.

HISTORIC RESOURCES

Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies

1) Identify and analyze significant archaeological resources;

2) Maximize information retention through preservation of remains and artifacts or salvage operations; and

3) Support State goals for protection, restoration, interpretation, and display of historic resources.

Check either "Yes" or "No" for each of the following questions.

	Yes	No
1. Is the project site within a historic/cultural district?		X
2. Is the project site listed on or nominated to the Hawaii or National register of historic places?		X
3. Does the project site include undeveloped land which has not been surveyed by an archaeologist?		X
4. Has a site survey revealed any information on historic or archaeological resources?		X
5. Is the project site within or near a Hawaiian fishpond or historic settlement area?		X

Discussion

The water area and shoreline have been extensively altered by dredging and filling activities beginning in the 1800's, and the entire existing harbor area is a man-made facility. No cultural, historic or archaeological resources have been identified in the vicinity of the proposed dredging project.

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies

1) Identify valued scenic resources in the coastal zone management area;

2) Insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

3) Preserve, maintain and, where desirable, improve and restore shoreline open space and scenic resources; and

4) Encourage those developments which are not coastal dependent to locate in inland areas.

Check either "Yes" or "No" for each of the following questions.

	Yes	No
1. Does the project site abut a scenic landmark?		X
2. Does the proposed action involve the construction of a multi-story structure or structures		X
3. Is the project site adjacent to undeveloped parcels?		X
4. Does the proposed action involve the construction of structures visible between the nearest coastal roadway and the shoreline?		X
5. Will the proposed action involve construction in or on waters seaward of the shoreline? On or near a beach?	X	

Discussion

5. The dredging project will take place in waters of Honolulu Harbor. Dredging equipment (boats and barges) will be on-site for one to two weeks.

COASTAL ECOSYSTEMS

Objective: Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Policies

1) Improve the technical basis for natural resource management;

2) Preserve valuable coastal ecosystems of significant biological or economic importance;

3) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs; and

4) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate State water quality standards.

Check either "Yes" or "No" for each of the following questions.

		Yes	No
1.	Does the proposed action involve dredge or fill activities?	X	
2.	Is the project site within the Shoreline Setback Area (20 to 40 feet inland of the shoreline)?		X
3.	Will the proposed action require some form of effluent discharge into a body of water?		X
4.	Will the proposed action require earthwork beyond clearing and grubbing?		X
5.	Will the proposed action include the construction of special waste treatment facilities, such as injection wells, discharge pipes, or cesspools?		X
6.	Is an intermittent or perennial stream located on or near the project site		X
7.	Does the project site provide habitat for endangered species of plants, birds, or mammals?		X
8.	Is any such habitat located nearby?		X
9.	Is there a wetland on the project site?		X
10.	Is the project site situated in or abutting a Natural Area Reserve?		X

	Yes	No
11. Is the project site situated in or abutting a Marine Life Conservation District?		X
12. Is the project site situated in or abutting an estuary?		X

Discussion

1. The proposed action involves dredging of approximately 1,800 cubic yards of Honolulu Harbor bottom sediments, from ana area 100 feet wide by 250 feet long adjacent to the west (ewa) end of Pier 51A. A turbidity barrier will be required to completely surround the dredge area, and daily water quality monitoring will be conducted to ensure the effectiveness of the turbidity barrier in preventing impacts to harbor waters outside of the dredge area. Dredge spoil will be barged to Kalaeloa (Barbers Point) Harbor for offloading into a containment area for dewatering (drying), and then disposed of at an on-land disposal site. No runoff or flow back into the harbor or coastal waters during any portion of the dredging or disposal operations will be permitted.

12. State water quality standards designate the project site in Honolulu Harbor as a Class A Embayment.

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies

1) Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;

2) Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

3) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:

   a) Utilization of presently designated locations is not feasible;

   b) Adverse environmental effects are minimized; and

   c) Important to the State's economy.

Check either "Yes" or "No" for each of the following questions.

	Yes	No
1. Does the project involve a harbor or port?	X	
2. Is the project site within a designated tourist destination area?		X
3. Does the project site include agricultural lands or lands designated for such use?		X
4. Does the proposed activity relate to commercial fishing or seafood production?		X
5. Does the proposed activity relate to energy production?		X
6. Does the proposed activity relate to seabed mining?		X

Discussion

1. Honolulu HArbor is the largest and most important of Oahu's and the States's commercial harbors. The harbor serves as the port-of-entry for nearly all imported goods to the State. The proposed dredging will improve the facilities for large vessels berthing at Pier 51A in Honolulu Harbor. Dredging will increase the depth adjacent to Pier 51A to a uniform -40 feet, which is consistent with the federally maintained project depth in Kapalama Basin. The project will result in economic benefit by permitting deeper draft vessels to safely berth at the pier. At present, some of the large container ships and fuel tankers utilizing Pier 51A must be less than optimally loaded due to the depth limitations in the vicinity of the dock.

COASTAL HAZARDS

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Policies

1) Develop and communicate adequate information on storm wave, tsunami, flood erosion, and subsidence hazard@,

2) Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;

3) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and

4) Prevent coastal flooding from inland projects.

Check either "Yes" or 'No" for each of the following questions.

	Yes	No
1. Is the project site on or abutting a sandy beach?		X
2. Is the project site within a potential tsunami inundation area as depicted on the National Flood Insurance Program flood hazard map?		X
3. Is the project site within a potential flood inundation area according to a flood hazard map?		X
4. Is the project site within a potential subsidence hazard area according to a subsidence hazard map?		X
5. Has the project site or nearby shoreline areas experienced shoreline erosion?	X	

Discussion

5. Unprotected portions of the Sand Island shoreline adjacent to the area to be dredged show some evidence of erosion of the unconsolidated sediments. The proposed dredging is 100 feet or more seaward of the shore, and is not expected to result in any shoreline changes.

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies

1) Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;

2) Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements; and

3) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.

Check either "Yes" or "No" for each of the following questions.

	Yes	No
1. Will the proposed activity require more than two (2) permits or approvals?		X
2. Does the proposed activity conform with the State and County land use designations for the site?	X	
3. Has or will the public be notified of the proposed activity?	X	
4. Has a draft or final environmental impact statement or an environmental assessment been prepared?	X	

Discussion

1. The proposed dredging will require a Section 10 (River and Harbor Act) permit from the Department of the Army (DA). As part of the DA permit process, CZM Program consistency determination concurrence will be required from the State Department of Business, Economic Development & Tourism, Office of Planning. There will be no filling of, or discharge into, U.S. waters, thus no DA Section 404 (Clean Water Act) permit will be required, nor Section 401 Water Quality Certification from the State Department of Health. Dredging is consistent with the approved use of Honolulu Harbor submerged lands for harbor facilities, thus no Conservation District Use Permit is required from the State Department of Land & Natural Resources.

3. Public notification will be made through The Environmental Notice published by the State Office of Environmental Quality Control (OEQC).

4. A Draft Environmental Assessment (EA) has been prepared for the proposed project, and accompanies this CZM consistency determination. The Draft and Final EA will be coordinated through OEQC.

PUBLIC PARTICIPATION

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies

1) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;

2) Disseminate information an coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

3) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion: *Please provide information about the proposal relevant to the Objective and Policies No. 2 and No. 3 above.*

Project meetings have been held with Honolulu Harbor Pier 51A users to inform them about the proposed dredging and solicit their input. Public input will be solicited through announcement of the project iand the availability of the Draft EA in the OEQC publication The Environmental Notice.

BEACH PROTECTION

Objective: Protect beaches for public use and recreation.

Policies

1) Locate new Structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

2) Prohibit construction of private erosion-Protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

3) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion: *Please provide information about the proposal relevant to the objective and Policies above.*

The proposed dredging will have no impact on sandy shorelines or public beaches.

MARINE RESOURCES

Objective: Implement the State's ocean resources management plan.

Policies

1) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

2) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

3) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

4) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

5) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

6) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: *Please provide information about the proposal relevant to the objective and Policies above.*

A detailed Environmental Assessment for the proposed project has been prepared, describing marine flora and fauna and water quality in the project area and addressing impacts to marine resources. Impacts to marine resources are anticipated to be insignificant outside of the immediate area of dredging, and impacts will be mitigated by the implementation of Best Management Practices (BMP's) for the work. The project specifications require that the dredging contractor submit a written Environmental Protection Plan for approval by the Director, Department of Transportation. The project plan and specifications also require the use of a turbidity barrier to completely surround the dredge area, and daily water quality monitoring to ensure the effectiveness of the turbidity barrier in preventing impacts to harbor waters.

FEDERAL CONSISTENCY
SUPPLEMENTAL INFORMATION FORM

Project/Activity Title or Description: Dredge Ewa End of 51A, Honolulu Harbor, Oahu, Hawaii, Job H. C. 10118

Island Oahu Tax Map Key No. ______ Est. Start Date: March 2003

APPLICANT OR AGENT

Name & Title Scott P. Sullivan, Vice President (Agent)

Agency/Organization Sea Engineering, Inc. Phone: (808) 259-7966

Address Makai Research Pier, Waimanalo, Hawaii Zip: 96795-1820

TYPE OF APPLICATION (check one only)

[ ] I. Federal Activity (statement "a")

"The proposed activity is consistent with and will be conducted in a manner consistent to the maximum extent practicable with the Hawaii Coastal Zone Management Program."

Signature: ______ Date: ______

[X] II. Permit or License (statement "b")

"The proposed activity complies with Hawaii's Coastal Zone Management Program and will be conducted in a manner consistent with such a program."

Signature: Scott P. Sullivan Date: 6/4/02

[ ] III. OCS Plan/Permit

[ ] IV. Grants & Assistance

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA, Ph.D.
DIRECTOR
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DEPUTY DIRECTOR
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Ref. No. P-9759

JUL

July 11, 2002

Mr. Scott P. Sullivan, Vice President
Sea Engineering, Inc.
Makai Research Pier
41-202 Kalanianaole Highway, Suite 8
Waimanalo, Hawaii 96795-1820

Dear Mr. Sullivan:

Subject: Hawaii Coastal Zone Management (CZM) Program Federal Consistency Review for Maintenance Dredging at Ewa End of Pier 51A, Honolulu Harbor, Oahu (Job H.C. 10118); Department of the Army Permit File No. 200200358

The CZM federal consistency review of the State Department of Transportation proposal to maintenance dredge 1,800 cubic yards of accumulated silt, sand and gravel from an area 100 feet wide by 250 feet long and to the federal project depth of 40 feet, at the west/ewa end of Pier 51A at Honolulu Harbor has been completed. We concur with your CZM certification that the activity is consistent based on the following conditions.

1. The project shall comply with State of Hawaii water quality standards as specified in Hawaii Administrative Rules, Chapter 11-54, and Hawaii Revised Statutes, Chapter 342D, which are administered by the Department of Health and are federally-approved enforceable policies of the Hawaii CZM Program.

2. The mitigation measures proposed in Section 5.0 (p. 29) of the Draft Environmental Assessment (submitted in support of the CZM consistency certification), including water quality monitoring, turbidity barriers, dredge material containment and drying, and land disposal, shall all be fully implemented.

CZM consistency concurrence is not an endorsement of the project nor does it convey approval with any other regulations administered by any State or County agency. Thank you for your cooperation in complying with Hawaii's CZM Program. If you have any questions, please call John Nakagawa of our CZM Program at 587-2878.

Sincerely,

David W. Blane, AICP
Director
Office of Planning

c: U.S. Army Corps of Engineers, Regulatory Branch
U.S. National Marine Fisheries Service, Pacific Area Office
U.S. Fish and Wildlife Service, Pacific Islands Ecoregion
Dr. Wendy Wiltse, U.S. Environmental Protection Agency
Department of Health, Clean Water Branch
Department of Land & Natural Resources, Planning Branch
Department of Transportation, Harbors Division
Department of Planning and Permitting, City & County of Honolulu